

FIG. 1A

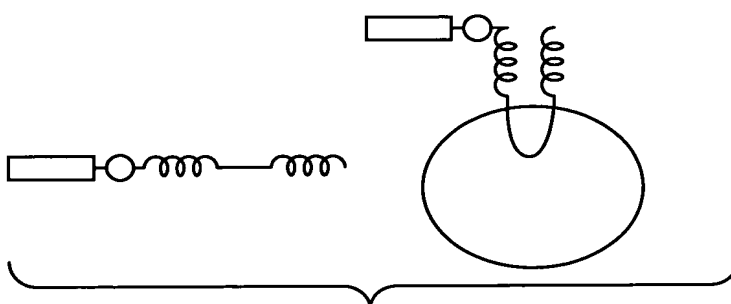


FIG. 1B

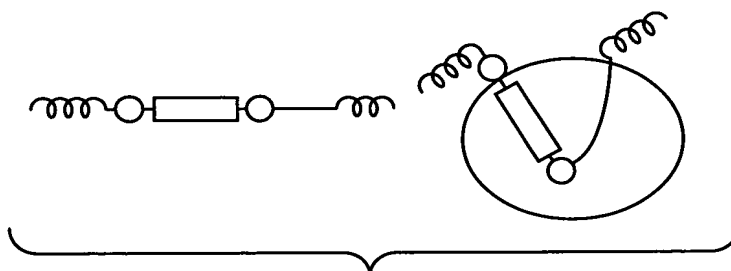


FIG. 1C

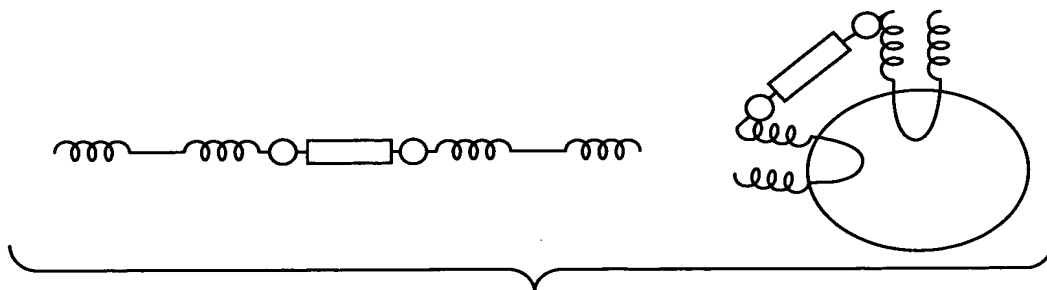


FIG. 1D



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

-867 NcoI
CCATGGCTATACCCAACCTCGGTCTTGGTCACACCAGGAAGTCTCTGGTAAGCTAGCTCCACTCCCCAGAAACAACCGGCGCCAAATTGC

-777 CGGAATTGCTGACCTGAAGACGGAACATCATCGTCGGGTCCTTGGGCGATTGCGGCGGAAGATGGGTACAGTTGGGCTTGAGGACGAGAC

-687 CCGAATCGAGTCTGTTGAAAGTTGTTTCATTGGGATTGTATACGGAGATTGGTCGTCGAGAGGTTTGAGGGAAAGGACAAATGGGTTTG
R1

-597 GCTCTGGAGAAAGAGAGTCGGCTTTAGAGAGAGAATTGAGAGGTTTAGAGAGAGATGCGGCGGCGATGACGGGAGGAGAGACGACGAGG
R2 R2

-507 ACCTGCATTATCAAAGCAGTGACGTGGTGAATTTGGAACTTTAAAGAGGCAGATAGATTTATTATTGTATCCATTTTCTTCATTGTTTC
R1

-417 TAGAATGTCGCGGAACAAATTTTAAACTAAATCTAAATTTTCTAATTTTGTGCCAATAGTGGATATGTGGCCGTATAGAAGGAAT

-327 CTATTGAAGGCCAAACCCATACTGACGAGCCCAAAGGTCGTTTTGCGTTTTATGTTTCGGTTCGATGCCAACGCCACATTCTGAGCTA
I

-237 GGCAAAAACAAACGTGTCTTTGAATAGACTCCTCTCGTTAACACATGCAGCGGCTGCATGGTGACGCCATTAACACGTGGCCTACAATT

-147 GCATGATGTCTCCATTGACACGTGACTTCTCGTCTCCTTTCTTAATATATCTAACAAACACTCCTACCTCTCCAAAATATATACACATC

-57 TTTTTGATCAATCTCTCATTCAAAATCTCATTCTCTCTAGTAAACAAGAACAAAAAATGGCGGATACAGCTAGAGGAACCCATCAGCAT
M A D T A R G T H H D

34 I I G R D O Y P M M G R D R D O Y O M S G R G S D Y S K S R
ATCATCGGCAGAGACCAGTACCCGATCATGGGCCGAGACCAGTACCAGATGTCGGACGAGGATCTGACTACTCCAAGTCTAGG

124 Q I A K A A T A V T A G G S L L V L S S L T L V G T V I A L
CAGATTGCTAAAGCTGCAACTGCTGTACAGTGGTGGTTCCTCTCTCCAGCCTTACCCTTGTGGAAGTGTACATAGCTTTG

214 T V A T P L L V I F S P I L V P A L I T V A L L I T G F L S
ACTGTTGCAACACCTCTGCTCGTTATCTTCAGCCCAATCCTGTCCGGCTCTCATCAGTTGCACTCCTCATCACCAGTTTCTTTCC

304 S G G F G I A A I T V F S W I Y K
TCTGGAGGGTTTGGCATTGCCGCTATAACCGTTTCTCTTGATTACAAgtaagcacacatttatcatcttacttcataatttgtgca

394 atatgtgcatgcatgtgttgagccagtagctttggatcaattttttggtcgaataacaaatgtaacaataagaaattgcaaattctagg

484 gaacatttggtaactaaatacgaaatttgacctagctagcttgaatgtgtctgtgttatatcatctatataggtaaaatgcttggatga

574 tacctattgattgtgaatagGTACGCAACGGGAGAGACCCACAGGGATCAGACAAGTTGGACAGTGAAGGATGAAGTTGGGAAGCAAA
Y A T G E H P Q G S D K L D S A R M K L G S K

664 A O D L K D R A O Y Y G O O H T G G E H D R D R T R G G O H
GCTCAGGATCTGAAAGACAGAGTCACTACTACGGACAGCAACATACTGGTGGGGAACATGACCGTGACCGTACTCGTGGTGGCCAGCAC

754 T T *
ACTACTTAAGTTACCCACTGATGTCATCGTCATAGTCCAATAACTCCAATGTCGGGGAGTTAGTTTATGAGGAATAAAGTGTTTAGAAT

844 TTGATCAGGGGAGATAATAAAAGCCGAGTTTGAATCTTTTGTATAAGTAATGTTTATGTGTGTTCTATATGTTGTCAAATGGTACC
KpnI

FIG. 2

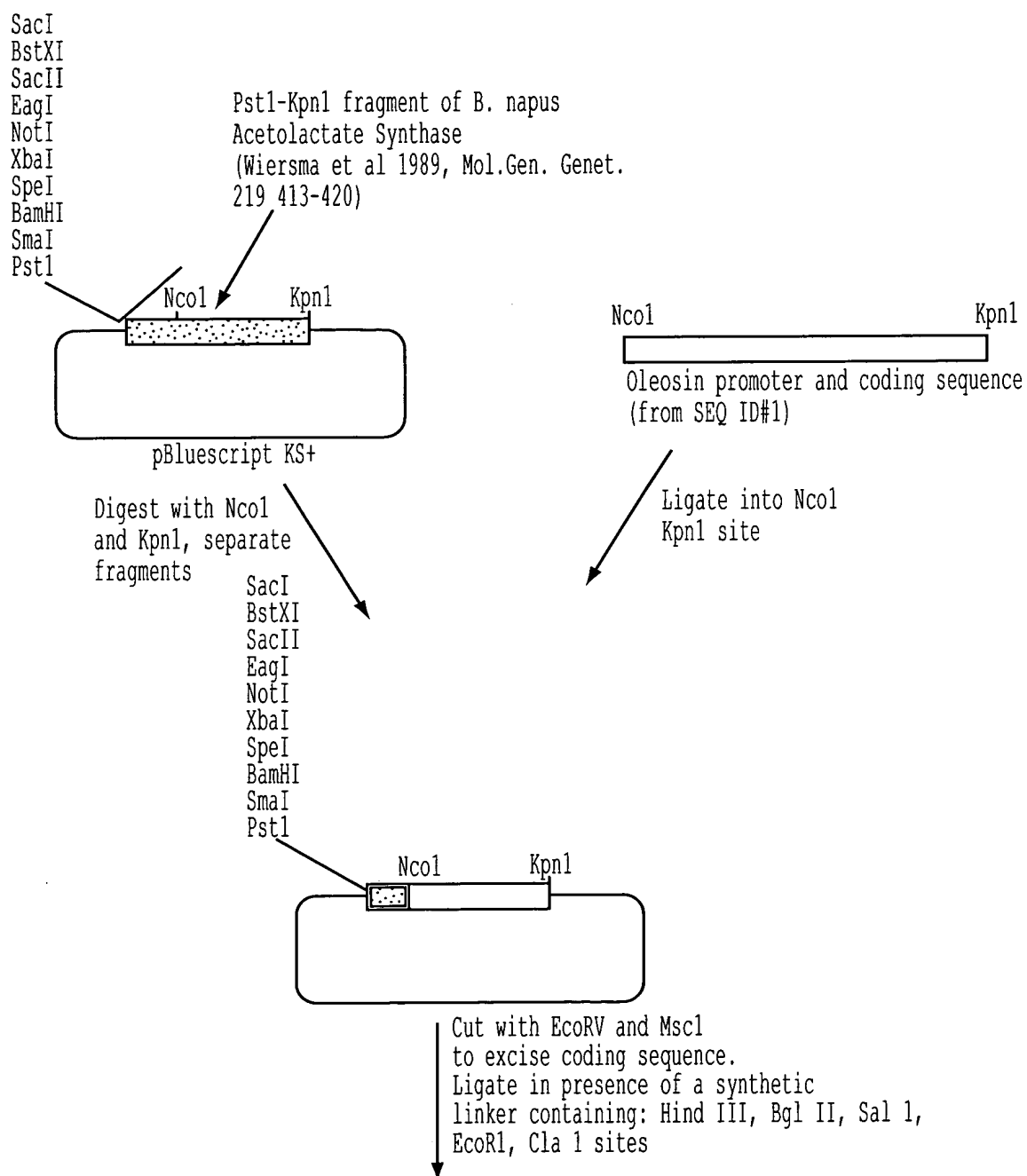


FIG. 3



Title: PREPARATION OF
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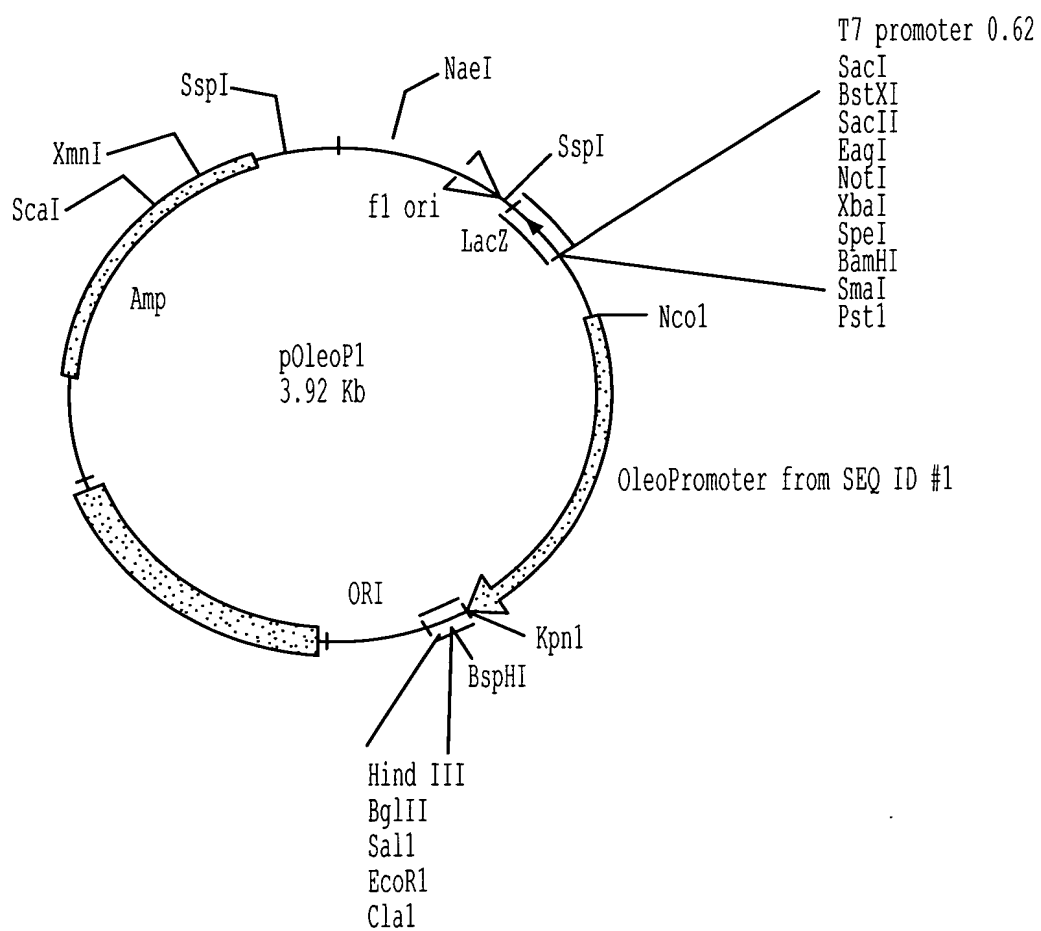


FIG. 3A



```
1  ATG GCG GAT ACA GCT AGA ACC CAT CAC GAT GTC ACA AGT CGA GAT CAG TAT CCC CGA GAC 60
1  M  A  D  T  A  R  T  H  H  D  V  T  S  R  D  Q  Y  P  R  D  20

61  CGA GAC CAG TAT TCT ATG ATC GGT CGA GAC CGT GAC CAG TAC TCT ATG ATG GGC CGA GAC 120
21  R  D  Q  Y  S  M  I  G  R  D  R  D  Q  Y  S  M  M  G  R  D  40

121  CGA GAC CAG TAC AAC ATG TAT GGT CGA GAC TAC TCC AAG TCT AGA CAG ATT GCT AAG GCT 180
41  R  D  Q  Y  N  M  Y  G  R  D  Y  S  K  S  R  Q  I  A  K  A  60

181  GTT ACC GCA GTC ACG GCG GGT GGG TCC CTC CTT GTC CTC TCC AGT CTC ACC CTT GTT GGT 240
61  V  T  A  V  T  A  G  G  S  L  L  V  L  S  S  L  T  L  V  G  80

241  ACT GTC ATT GCT TTG ACT GTT GCC ACT CCA CTC CTC GTT ATC TTT AGC CCA ATC CTC GTG 300
81  T  V  I  A  L  T  V  A  T  P  L  L  V  I  F  S  P  I  L  V  100

301  CCG GCT CTC ATC ACC GTA GCA CTT CTC ATC ACT GGC TTT CTC TCC TCT GGT GGG TTT GCC 360
101 P  A  L  I  T  V  A  L  L  I  T  G  F  L  S  S  G  G  F  A  120

361  ATT GCA GCT ATA ACC GTC TTC TCC TGG ATC TAT AAG TAC GCA ACG GGA GAG CAC CCA CAG 420
121 I  A  A  I  T  V  F  S  W  I  Y  K  Y  A  T  G  E  H  P  Q  140

421  GGG TCA GAT AAG TTG GAC AGT GCA AGG ATG AAG CTG GGA ACC AAA GCT CAG GAT ATT AAA 480
141 G  S  D  K  L  D  S  A  R  M  K  L  G  T  K  A  Q  D  I  K  160

481  GAC AGA GCT CAA TAC TAC GGA CAG CAA CAT ACA GGT GGT GAG CAT GAC CGT GAC CGT ACT 540
161 D  R  A  Q  Y  Y  G  Q  Q  H  T  G  G  E  H  D  R  D  R  T  180

541  CGT GGT GGC CAG CAC ACT ACT TAA 564
181 R  G  G  Q  H  T  T  * 188
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FIG. 4

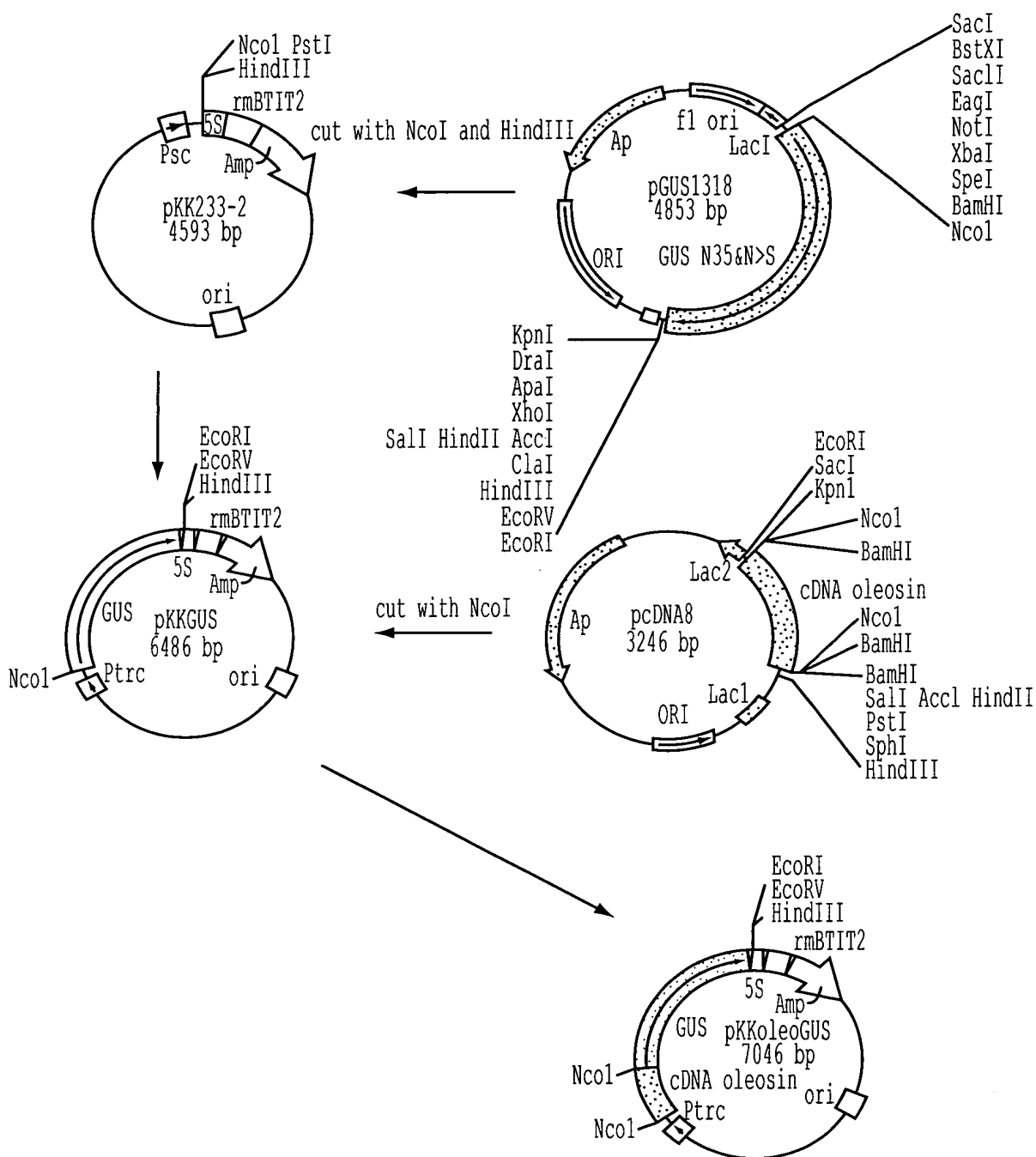


FIG. 5



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

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1  ATAAGCTTGCATGCCTGCGGAAGTCTCTGGTAAGCTAGCTCCACTCCCCAGAAACAACCG 60
61  GCGCCAAATTGCCGAATTGCTGACCTGAAGACGGAACATCATCGTCGGGTCTTTGGGCG 120
121 ATTGCGGCGGAAGATGGGTGAGCTTGGGCTTGAGGACGAGACCCGAATCGAGTCTGTTGA 180
181 AAGGTTGTTTATTGGGATTGTATACGGAGATTGGTCGTCGAGAGGTTTGAGGGAAAGGA 240
241 CAAATGGGTTTGGCTCTGGAGAAAGAGAGTGCAGGCTTTAGAGAGAGAATTGAGAGGTTTA 300
301 GAGAGAGATGCGGCGGCGATGACGGGAGGAGAGACGAGGACCTGCATTATCAAAGCA 360
361 GTGACGTGGTGAAATTTGGAACTTTAAAGAGCAGATAGATTTATTTATTTGTATCCATTT 420
421 TCTTCATTGTTCTAGAATGTCGCGGAACAAATTTTAAAGTAAATGGTAAATTTTCTAA 480
481 TTTTGTGGCAATAGTGGATATGTGGGCGGTATAGAAGGAATCTATTGAAGGCCAAACC 540
541 CATACTGACGAGCCCAAGGTTCTGTTTTCGCTTTTATGTTTCGGTTCGATGCCAACGCCA 600
601 CATTCTGAGCTAGGCAAAAACAAACGTGTCTTTGAATAGACTCCTCTCGTTAACACATG 660
661 CAGCGGCTGCATGGTGACGCCATTAACACGTGGCCTACAATTGCATGATGTCTCCATTGA 720
721 CACGTGACTTCTCGTCTCCTTTCTTAATATATCTAACAACACTCTACCTCTTCCAAAA 780
781 TATATACACATCTTTTGTATCAATCTCTCATTCAAAATCTCATTCTCTCTAGTAAACAAG 840
      M A D T A R G T H H D I I G R D Q
841 AACAAAAAATGGCGGATACAGCTAGAGGAACCCATCACGATATCATCGGCAGAGACCAG 900
      Y P M M G R D R D Q Y Q M S G R G S D Y
901 TACCCGATGATGGGCGGAGACCGAGACCAGTACCAGATGTCCGGACGAGGATCTGACTAC 960
      S K S R Q I A K A A T A V T A G G S L L
961 TCCAAGTCTAGGCAGATTGCTAAAGCTGCAACTGCTGTCACAGCTGGTGGTTCCTCCTT 1020
      V L S S L T L V G T V I A L T V A T P L
1021 GTTCTCTCCAGCCTTACCCTTGTGGAAGTGTATAGCTTTGACTGTTGCAACACCTCTG 1080
      L V I F S P I L V P A L I T V A L L I T
1081 CTCGTTATCTTCAGCCCAATCCTTGTCCCGGCTCTCATCACAGTTGCACTCCTCATCACC 1140
      G F L S S G G F G I A A I T V F S W I Y
1141 GGTTCCTTCTCTGAGGGTTTGGCATTGCCGCTATAACCGTTTCTCTTGATTAC 1200
      K
1201 AAGTAAGCACACATTTATCATCTTACTTCATAATTTTGTGCAATATGTGCATGCATGTGT 1260
1261 TGAGCCAGTAGCTTTGGATCAATTTTTTGGTGAATAACAAATGTAACAATAAGAAATT 1320
1321 GCAAATCTAGGGAACATTTGGTTAACTAAATACGAAATTTGACCTAGCTAGCTTGAATG 1380
1381 TGTCTGTGTATATCATCTATATAGGTAAATGCTTGGTATGATACCTATTGATTGTGAAT 1440
      Y A T G E H P Q G S D K L D S A R M K
1441 AGGTACGCAACGGGAGAGACCCACAGGGATCAGACAAGTTGGACAGTGCAAGGATGAAG 1500
      L G S K A Q D L K D R A Q Y Y G Q Q H T
1501 TTGGGAAGCAAAGCTCAGGATCTGAAAGACAGAGCTCAGTACTACGGACAGCAACATACT 1560
      G G E H D R D R T R G G Q H T T L V P R
1561 GGTGGGGAACATGACCGTGACCGTACTCGTGGTGGCCAGCACACTACTCTCGTTCCACGA 1620
      G S M A E I T R I P L Y K G K S L R K A
1621 GGATCCATGGCTGAGATCACCAGGATGGGTCTGTACAAAGGCAAGTCTCTGAGGAAGGCG 1680
      L K E H G L L E D F L Q K Q Q Y G I S S
1681 CTGAAGGAGCATGGGCTTCTGGAGGACTTCTGCAGAAACAGCAGTATGGCATCAGCAGC 1740
      K Y S G F G E V A S V P L T N Y L D S Q
1742 AAGTACTCCGGCTTCGGGGAGGTGGCCAGCGTCCCCTGACCAACTACCTGGATAGTCAG 1800
```

FIG. 6



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

Y F G K I Y L G T P P Q E F T V L F D T
1801 TACTTTGGGAAGATCTACCTCGGGACCCGCCCCAGGAGTTCACCGTGCTGTTTGACACT 1860
G S S D F W V P S I Y C K S N A C K N H
1861 GGCTCCTCTGACTTCTGGGTACCTCTATCTACTGCAAGAGCAATGCCTGCAAAAACCAC 1920
Q R F D P R K S S T F Q N L G K P L S I
1921 CAGCGCTTCGACCCGAGAAAGTCGTCCACCTTCCAGAACCTGGGCAAGCCCTGTCTATC 1980
H Y G T G S M Q G I L G Y D T V T V S N
1981 CACTACGGGACAGGCAGCATGCAGGGCATCCTGGGCTATGACACCGTCACTGTCTCCAAC 2040
I V D I Q Q T V G L S T Q E P G D V F T
2041 ATTGTGGACATCCAGCAGACAGTAGGCCTGAGCACCAGGAGCCCGGGGACGTCTTCACC 2100
Y A E F D G I L G M A Y P S L A S E Y S
2101 TATGCCGAATTCGACGGGATCCTGGGGATGGCCTACCCCTCGCTCGCCTCAGAGTACTCG 2160
I P V F D N M M N R H L V A Q D L F S V
2161 ATACCCGTGTTTGACAACATGATGAACAGGCACCTGGTGGCCCAAGACCTGTTCTCGGTT 2220
Y M D R N G Q E S M L T L G A I D P S Y
2221 TACACAGGGTCCCTGCACCTGGGTGCCGTGACAGTGCAGCAGTACTGGCAGTTCCTGTG 2280
Y T G S L H W V P V T V Q Q Y W Q F T V
2281 GACAGTGTACCATCAGCGGTGTGTTGTGGCCTGTGAGGGTGGCTGTGAGGCCATCTTG 2340
D S V T I S G V V V A C E G G C Q A I L
2341 GACAGTGTACCATCAGCGGTGTGTTGTGGCCTGTGAGGGTGGCTGTGAGGCCATCTTG 2400
D T G T S K L V G P S S D I L N I Q Q A
2401 GACACGGGCACCTCCAAGCTGGTCGGGCCCAGCAGCGACATCCTCAACATCCAGCAGGCC 2460
I G A T Q N Q Y G E F D I D C D N L S Y
2461 ATTGGAGCCACACAGAACCAGTACGGTGAGTTTGACATCGACTGCCACAACCTGAGCTAC 2520
M P T V V F E I N G K M Y P L T P S A Y
2521 ATGCCCACTGTGGTCTTTGAGATCAATGGCAAAATGTACCCACTGACCCCTCCGCCTAT 2580
T S Q D Q G F C T S G F Q S E N H S Q K
2581 ACCAGCCAAGACCAGGGCTTCTGTACCAGTGGCTTCCAGAGTGAAAATCATTCCCAGAAA 2640
W I L G D V F I R E Y Y S V F D R A N N
2641 TGGATCCTGGGGATGTTTTATCCGAGAGTATTACAGCGTCTTTGACAGGGCCAACAAC 2700
L V G L A K A I *
2701 CTCGTGGGGCTGGCCAAAGCCATCTGAAAGCTT 2733

HindIII

FIG. 6A

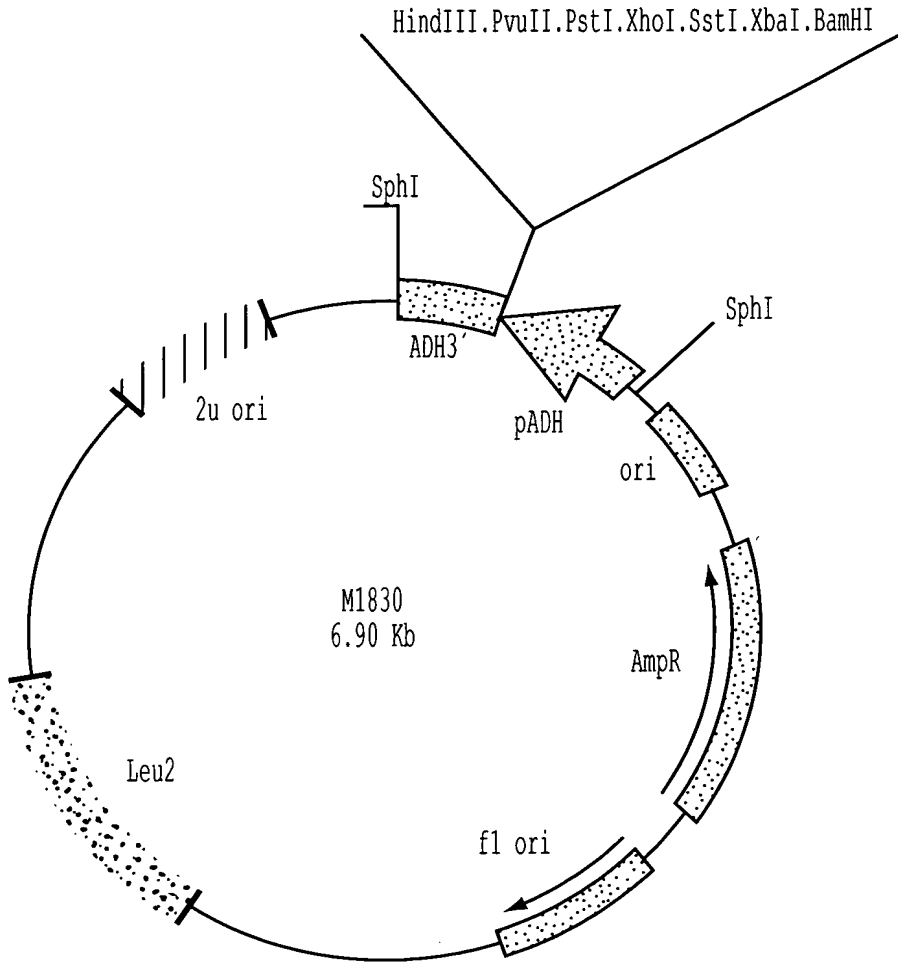


FIG. 7



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

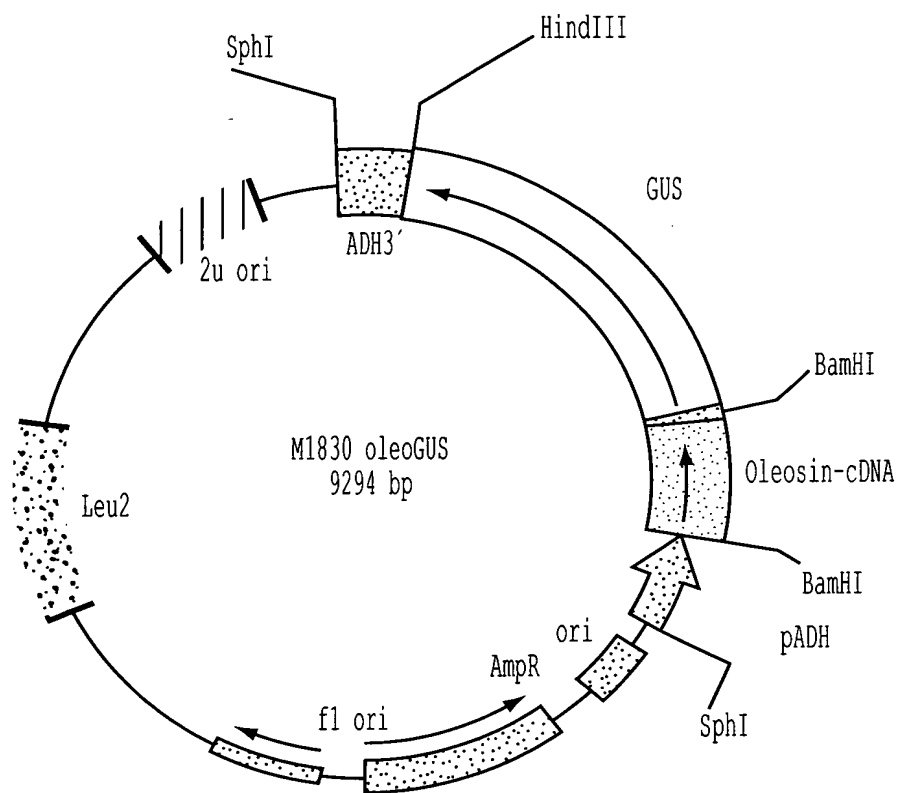
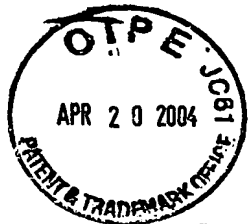


FIG. 8



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

	10	20	30	40	50	60
TR	ATGAATGGTCTCGAACTCACAACACAAGGCTCTGTATCGTAGGAAGTGGCCAGCGGCA					
ATTHIREDB	ATGAATGGTCTCGAACTCACAACACAAGGCTCTGTATCGTAGGAAGTGGCCAGCGGCA					
	70	80	90	100	110	120
TR	CACACGGCGGCGATTACGCAGCTAGGGCTGAACTTAAACCTCTTCTCTTCTCGAAGGATGG					
ATTHIREDB	CACACGGCGGCGATTACGCAGCTAGGGCTGAACTTAAACCTCTTCTCTTCTCGAAGGATGG					
	130	140	150	160	170	180
TR	ATGGCTAACGACATCGCTCCCGGTGGTCAACTAACAACCAACACCGGCTCGAGAATTTC					
ATTHIREDB	ATGGCTAACGACATCGCTCCCGGTGGTCAACT--CAACCAACCAACCGGCTCGAGAATTTC					
	190	200	210	220	230	240
TR	CCCGGATTTCCAGAAGGTATTCTCGGAGTAGAGCTCACTGACAAATTCCGTAAACAATCG					
ATTHIREDB	CCCGGATTTCCAGAAGGTATTCTCGGAGTAGAGCTCACTGACAAATTCCGTAAACAATCG					
	250	260	270	280	290	300
TR	GAGCGATTCCGGTACTACGATATTTACAGAGACGGTGACGAAAGTCGATTTCTCTTCGAAA					
ATTHIREDB	GAGCGATTCCGGTACTACGATATTTACAGAGACGGTGACGAAAGTCGATTTCTCTTCGAAA					
	310	320	330	340	350	360
TR	CCGTTTAAGCTATTCACAGATTCAAAGCCATTCTCGCTGACGCTGTGATTCTCGCTACT					
ATTHIREDB	CCGTTTAAGCTATTCACAGATTCAAAGCCATTCTCGCTGACGCTGTGATTCTCGCTATC					
	370	380	390	400	410	420
TR	GGAGCTGTGGCTAAGCGGCTTAGCTTCGTTGGATCTGGTGAAGGTTCTCGAGGTTTCTGG					
ATTHIREDB	GGAGCTGTGGCTAAGTGGCTTAGCTTCGTTGGATCTGGTGAAGTCTCGAGGTTTCTGG					
	430	440	450	460	470	480
TR	AACCGTGGAATCTCCGCTTGTGCTGTTTGCACGGAGCTGCTCCGATATTCCGTAACAAA					
ATTHIREDB	AACCGTGGAATCTCCGCTTGTGCTGTTTGCACGGAGCTGCTCCGATATTCCGTAACAAA					
	490	500	510	520	530	540
TR	CCTCTTGCGGTGATCGGTGGAGGCGATTCA GCAATGGAAGAAGCAAACCTTTCTTACAAAA					
ATTHIREDB	CCTCTTGCGGTGATCGGTGGAGGCGATTCTGCAATGGAAGAAGCAAACCTTTCTTACAAAA					
	550	560	570	580	590	600
TR	TATGGATCTAAAGTGTATATAATCGATAGGAGAGATGCTTTTAGAGCGTCTAAGATTATG					
ATTHIREDB	TATGGATCTAAAGTGTATATAATCGATAGGAGAGATGCTTTTAGAGCGTCTAAGATTATG					
	610	620	630	640	650	660
TR	CAGCAGCGAGCTTTGTCTAATCCTAAGATTGATGTGATTTGGAAGTCTGTTGTGGAA					
ATTHIREDB	CAGCAGCGAGCTTTGTCTAATCCTAAGATTGATGTGATTTGGAAGTCTGTTGTGGAA					
	670	680	690	700	710	720
TR	GCTTATGGAGATGGAGAAAGAGATGTGCTTGGAGGATTGAAAGTGAAGAATGTGGTTACC					
ATTHIREDB	GCTTATGGAGATGGAGAAAGAGATGTGCTTGGAGGATTGAAAGTGAAGAATGTGGTTACC					
	730	740	750	760	770	780
TR	GGAGATGTTTCTGATTTAAAAGTTTCTGGATTGTTCTTTGCTATTGGTCATGAGCCAGCT					
ATTHIREDB	GGAGATGTTTCTGATTTAAAAGTTTCTGGATTGTTCTTTGCTATTGGTCATGAGCCAGCT					
	790	800	810	820	830	840
TR	ACCAAGTTTTTGGATGGTGGTGGTGGATTAGATTCCGATGGTTATGTTGTCACGAAGCCT					
ATTHIREDB	ACCAAGTTTTTGGATGGTGGTGGTGGATTAGATTCCGATGGTTATGTTGTCACGAAGCCT					
	850	860	870	880	890	900
TR	GGTACTACACAGACTAGCGTTCCCGGAGTTTTCGCTGCGGGTGATGTTTCAGGATAAGAAG					
ATTHIREDB	GGTACTACACAGACTAGCGTTCCCGGAGTTTTCGCTGCGGGTGATGTTTCAGGATAAGAAG					
	910	920	930	940	950	960
TR	TATAGGCAAGCCATCACTGCTGCAGGAAGTGGGTGCATGGCAGCTTTGGATGCAGAGCAT					
ATTHIREDB	TATAGGCAAGCCATCACTGCTGCAGGAAGTGGGTGCATGGCAGCTTTGGATGCAGAGCAT					
	970	980	990	1000	1010	1020
TR	TACTTACAAGAGATTGGATCTCAGCAAGGTAAGAGTGATTGA					
ATTHIREDB	TACTTACAAGAGATTGGATCTCAGCAAGGTAAGAGTGATTGA					

FIG. 9



Title: PREPARATION OF
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Appl. No.: 09/897,425

1	ATG	AAT	GGT	CTC	GAA	ACT	CAC	AAC	ACA	AGG	CTC	TGT	ATC	GTA	GGA	AGT	GGC	CCA	GCG	GCA	60
1	M	N	G	L	E	T	H	N	T	R	L	C	I	V	G	S	G	P	A	A	20
61	CAC	AGC	GCG	GCG	ATT	TAC	CGA	GCT	AGG	GCT	GAA	CTT	AAA	CCT	CTT	CTC	TTC	GAA	GGA	TGG	120
21	H	T	A	A	I	Y	A	A	R	A	E	L	K	P	L	L	F	E	G	W	40
121	ATG	GCT	AAC	GAC	ATC	GCT	CCC	GGT	GGT	CAA	CTA	ACA	ACC	ACC	ACC	GAC	GTC	GAG	AAT	TTC	180
41	M	A	N	D	I	A	P	G	G	Q	L	T	T	T	T	D	V	E	N	F	60
181	CCC	GGA	TTT	CCA	GAA	GGT	ATT	CAC	GGA	GTA	GAG	CTC	ACT	GAC	AAA	TTC	CGT	AAA	CAA	TCG	240
61	P	G	F	P	E	G	I	L	G	V	E	L	T	D	K	F	R	K	Q	S	80
241	GAG	CGA	TTC	GGT	ACT	ACG	ATA	TTT	ACA	GAG	ACG	GTG	ACG	AAA	GTC	GAT	TTC	TCT	TCG	AAA	300
81	E	R	F	G	T	T	I	F	T	E	T	V	T	K	V	D	F	S	S	K	100
301	CCG	TTT	AAG	CTA	TTC	ACA	GAT	TCA	AAA	GCC	ATT	CTC	GCT	GAC	GCT	GTG	ATT	CTC	GCT	ACT	360
101	P	F	K	L	F	T	D	S	K	A	I	L	A	D	A	V	I	L	A	T	120
361	GGA	GCT	GTG	GCT	AAG	CGG	CTT	AGC	TTC	GTT	GGA	TCT	GGT	GAA	GGT	TCT	GGA	GGT	TTC	TGG	420
121	G	A	V	A	K	R	L	S	F	V	G	S	G	E	G	S	G	G	F	W	140
421	AAC	CGT	GGA	ATC	TCC	GCT	TGT	GCT	GTT	TGC	GAC	GGA	GCT	GCT	CCG	ATA	TTC	CGT	AAC	AAA	480
141	N	R	G	I	S	A	C	A	V	C	D	G	A	A	P	I	F	R	N	K	160
481	CCT	CTT	GCG	GTG	ATC	GGT	GGA	GGC	GAT	TCA	GCA	ATG	GAA	GAA	GCA	AAC	TTT	CTT	ACA	AAA	540
161	P	L	A	V	I	G	G	G	D	S	A	M	E	E	A	N	F	L	T	K	180
541	TAT	GGA	TCT	AAA	GTG	TAT	ATA	ATC	CAT	AGG	AGA	GAT	GCT	TTT	AGA	GCG	TCT	AAG	ATT	ATG	600
181	Y	G	S	K	V	Y	I	I	H	R	R	D	A	F	R	A	S	K	I	M	200
601	CAG	CAG	CGA	GCT	TTG	TCT	AAT	CCT	AAG	ATT	GAT	GTG	ATT	TGG	AAC	TCG	TCT	GTT	GTG	GAA	660
201	Q	Q	R	A	L	S	N	P	K	I	D	V	I	W	N	S	S	V	V	E	220
661	GCT	TAT	GGA	GAT	GGA	GAA	AGA	GAT	GTG	CTT	GGA	GGA	TTG	AAA	GTG	AAG	AAT	GTG	GTT	ACC	720
221	A	Y	G	D	G	E	R	D	V	L	G	G	L	K	V	K	N	V	V	T	240
721	GGA	GAT	GTT	TCT	GAT	TTA	AAA	GTT	TCT	GGA	TTG	TTC	TTT	GCT	ATT	GGT	CAT	GAG	CCA	GCT	780
241	G	D	V	S	D	L	K	V	S	G	L	F	F	A	I	G	H	E	P	A	260
781	ACC	AAG	TTT	TTG	GAT	GGT	GGT	GTT	GAG	TTA	GAT	TCG	GAT	GGT	TAT	GTT	GTC	ACG	AAG	CCT	840
261	T	K	F	L	D	G	G	V	E	L	D	S	D	G	Y	V	V	T	K	P	280
841	GGT	ACT	ACA	CAG	ACT	AGC	GTT	CCC	GGA	GTT	TTC	GCT	GCG	GGT	GAT	GTT	CAG	GAT	AAG	AAG	900
281	G	T	T	Q	T	S	V	P	G	V	F	A	A	G	D	V	Q	D	K	K	300
901	TAT	AGG	CAA	GCC	ATC	ACT	GCT	GCA	GGA	ACT	GGG	TGC	ATG	GCA	GCT	TTG	GAT	GCA	GAG	CAT	960
301	Y	R	Q	A	I	T	A	A	G	T	G	C	M	A	A	L	D	A	E	H	320
961	TAC	TTA	CAA	GAG	ATT	GGA	TCT	CAG	CAA	GGT	AAG	AGT	GAT	TGA							1002
321	Y	L	Q	E	I	G	S	Q	Q	G	K	S	D	*							334

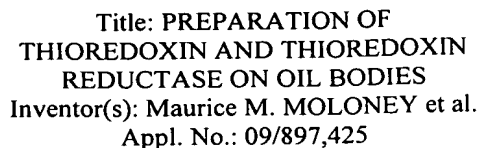
FIG. 10



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

	10	20	30	40	50	60
TRANSLATION OF ATTHIREDB	MNGLETHNTRLCIVGSGPAAHTAAIYAARAELKPLLFEGWMANDIAPGGQLNPP-RENF					
TRANSLATION OF TR	MNGLETHNTRLCIVGSGPAAHTAAIYAARAELKPLLFEGWMANDIAPGGQLITTTDVENF					
	70	80	90	100	110	120
TRANSLATION OF ATTHIREDB	PGFPEGILGVELTDKFRKQSERFGTTIFTETVTKVDFSSKPKLFDTSKAILADAVILAI					
TRANSLATION OF TR	PGFPEGILGVELTDKFRKQSERFGTTIFTETVTKVDFSSKPKLFDTSKAILADAVILAT					
	130	140	150	160	170	180
TRANSLATION OF ATTHIREDB	GAVAKWLSFVGSGEVLGGLWNRGISACAVCDGAAPIFRNKPLAVIGGGDSAMEEANFLTK					
TRANSLATION OF TR	GAVAKRLSFVGSGEGSGGLWNRGISACAVCDGAAPIFRNKPLAVIGGGDSAMEEANFLTK					
	190	200	210	220	230	240
TRANSLATION OF ATTHIREDB	YGSKVYIIRDAFRASKIMQQRALSNPKIDVIWNSSVVEAYGDGERDVLGGLKVKNVVT					
TRANSLATION OF TR	YGSKVYIIRDAFRASKIMQQRALSNPKIDVIWNSSVVEAYGDGERDVLGGLKVKNVVT					
	250	260	270	280	290	300
TRANSLATION OF ATTHIREDB	GDVSDLKVSGLFFAIGHEPATKFLDGGVELDSDGYVVTKPGTTQTSVPGVFAAGDVQDKK					
TRANSLATION OF TR	GDVSDLKVSGLFFAIGHEPATKFLDGGVELDSDGYVVTKPGTTQTSVPGVFAAGDVQDKK					
	310	320	330	340	350	360
TRANSLATION OF ATTHIREDB	YRQAITAAGTGCMAALDAEHYLQEIGSQQGS					
TRANSLATION OF TR	YRQAITAAGTGCMAALDAEHYLQEIGSQQGS					

FIG. 11



1 ctgcaggaattcattgtactcccagtatcattatagtgaaagtttggctctctcgccggtggtttttacctctattta 80
81 aaggggttttccacctaaaaattctggtatcattctcactttacttgttactttaatttctcataatctttggttgaat 160
61 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaacattttcaaaccgcataaaattttatgaagtc 240
41 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaattttagcgttggtagaaagcataa 320
21 tgatttattcttattcttcttcatataaatgtttaatatataataaacaattctttaccttaagaaggatttcccat 400
01 tttataattttaaaaatatatttatcaaataattttcaaccacgtaaatctcataataataagttgtttcaaaagtaataa 480
81 aatttaactccataatttttttattcgactgatcttaaagcaacaccagtgacacaactagccattttttctttgaat 560
61 aaaaaaatccaattatcattgtatttttttataacaatgaaaatttcaccaaacaatcatttgggtatttctgaagcaa 640
41 gtcattgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720
21 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800
01 ttagatataaattaaaatattacttttttaatttaagttaattgttgaatttggactattgatttattattctactat 880
81 gtttaaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgttagagtgttaccctaaaccataaac 960
61 tataagatttatggtggactaattttcatatatttcttattgcttttaccttttcttgggtatgtaagtccgtaactggaa 1040
41 ttactgtgggttgccatggcactctgtggtcttttggttcatgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120
21 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgctc 1200
01 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca 1280
81 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttcgccacctcaatttcttcactt 1360
61 caacacacgtcaacctgcatatgcgtgtcatccatgccccaaatctccatgcatgttccaaccaccttctctcttatata 1440
41 atacctataaataacctctaatatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520
21 ccccaaccaactcatattcaataactactctact ATG GCT TCG GAA GAA GGA CAA GTG ATC GCC TGC 1587
1 M A S E E G Q V I A C 11
88 CAC ACC GTT GAG ACA TGG AAC GAG CAG CTT CAG AAG GCT AAT GAA TCC AAA ACT CTT GTG 1647
12 H T V E T W N E Q L Q K A N E S K T L V 31
48 GTG GTT GAT TTC ACG GCT TCT TGG TGT GGA CCA TGT CGT TTC ATC GCT CCA TTC TTT GCT 1707
32 V V D F T A S W C G P C R F I A P F F A 51
08 GAT TTG GCT AAG AAA CTT CCT AAC GTG CTT TTC CTC AAG GTT GAT ACT GAT GAA TTG AAG 1767
52 D L A K K L P N V L F L K V D T D E L K

FIG. 12



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

1768 TCG GTG GCA AGT GAT TGG GCG ATA CAG GCG ATG CCA ACC TTC ATG TTT TTG AAG GAA GGG 1827
72 S V A S D W A I Q A M P T F M F L K E G 91
1828 AAG ATT TTG GAC AAA GTT GTT GGA GCC AAG AAA GAT GAG CTT CAG TCT ACC ATT GCC AAA 1887
92 K I L D K V V G A K K D E L Q S T I A K 111

HindIII

1888 CAC TTG GCT TAA gcttaataagtatgaactaaaatgcatgtaggtgtaagagctcatggagagcatggaatattgt 1963
112 H L A * 115

1964 atccgaccatgtaacagtataataactgagctccatctcacttcttctatgaataaacaaggatgttatgatataattaa 2043

2044 cactctatctatgcaccttattgttctatgataaatttcctcttattattataaatcatctgaatcgtgacggccttatgg 2123

2124 aatgcttcaaatagtacaaaaacaatgtgtactataagactttctaacaattctaacttttagcattgtgaacgagaca 2203

2204 taagtgttaagaagacataacaattataatggaagaagtttgctccatttatataattatataactaccacttatgtatt 2283

2284 atattagatgttaaggagacataacaattataaagagagaagtttgatccatttatataactataactaccatttat 2363

2364 atattatacttatccacttatttaagtctttataagggttgatccatgatatttctaataattttagttgatatgtatat 2443

2444 gaaaggttactatttgaactctcttactctgtataaagggttgatcatccttaaagtgggtctatttaattttattgctt 2523

2524 cttacagataaaaaaaaaattatgagttgggttgataaaatattgaaggatttaaataataataataataataacat 2603

2604 ataatatatgtatataaatttattataatataacatttatctataaaaaagtaaattgtcataaatctatacaatcgt 2683

2684 ttagccttgctggacgactctcaattatttaaacgagagtaaacatatttgactttttggttatttaacaaattattatt 2763

2764 taacactatatgaaatttttttttttatcggaaggaaataaaattaaattaggagggacaatggtgtgtcccaatcct 2843

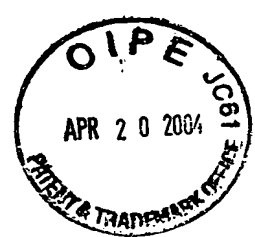
2844 tataacaaccaacttccacaggaaggtcaggtcggggacaacaaaaaacaggcaagggaatttttaatttggttgtc 2923

2924 ttgtttgctgcataatttatgcagtaaaacactacacataacccttttagcagtagagcaatggttgaccgtgtgcttag 3003

3004 cttcttttattttatttttttatcagcaaagaataaaataaaaatgagacacttcagggatgtttcaacccttatac 3083

3084 aaaacccccaaaaacaagtttcttagcaccctaccaactaagggtacc 3129
KpnI

FIG. 12A



PstI

1 ctgcaggaattcattgtactcccagtatcattatagtgaaagtttggctctctcgccggtggtttttacctctattta 80

81 aaggggttttccacctaaaaattctggtatcattctcactttacttgttactttaattttctcataatctttggttgaaat 160

161 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaaccattttcaaaccgcataaaattttatgaagtc 240

241 ccgtctatctttaatgtagtctaaccattttcatattgaaatatataatttacttaatttttagcgttggtagaaagcataa 320

321 tgatttattcttattcttcttcatataaatgtttaatatatacaataaacaattctttaccttaagaaggatttcccat 400

401 tttatattttaaaaatatatttatcaaataattttcaaccacgtaaattctcataataataagttgtttcaaaagtaataa 480

481 aatttaactccataatttttttattcgactgatcttaagcaacacccagtgcacacaactagccattttttctttgaat 560

561 aaaaaatccaattatcattgtattttttttatacaatgaaaatttcaccaaacaatcatttgtggtattttctgaagcaa 640

641 gtcatgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720

721 cttctaaagtaattttaataatagttactatatccaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800

801 ttagatataattaaaaattacttttttaattttaagtttaattgttgaaattgtgactattgatttattattctactat 880

881 gtttaaatgttttatagatagtttaagtaaatataagtaatgtagtagtggttagagtgttaccctaaccataaac 960

961 tataagatttatggtggactaattttcatatatttcttattgcttttaccttttcttggtatgtaagtcgtaactggaa 1040

1041 ttactgtgggttgccatggcactctgtggtcttttggttcatgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120

1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200

1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcacttttaaatggctcacccatctcaaccacacaca 1280

1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttcactt 1360

1361 caacacacgtcaacctgcatatgcgtgtcatccatgccaaatctccatgcatgttccaaccaccttctctcttatata 1440

1441 atacctataaatacctctaatatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520

1521 ccccaacccaactcatattcaataactactctact ATG GCG GAT ACA GCT AGA GGA ACC CAT CAC GAT 1587

1 M A D T A R G T H H D 11

1588 ATC ATC GGC AGA GAC CAG TAC CCG ATG ATG GGC CGA GAC CGA GAC CAG TAC CAG ATG TCC 1647

12 I I G R D Q Y P M M G R D R D Q Y Q M S 31

1648 GGA CGA GGA TCT GAC TAC TCC AAG TCT AGG CAG ATT GCT AAA GCT GCA ACT GCT GTC ACA 1707

32 G R G S D Y S K S R Q I A K A A T A V T 51

1708 GCT GGT GGT TCC CTC CTT GTT CTC TCC AGC CTT ACC CTT GTT GGA ACT GTC ATA GCT TTG 1767

52 A G G S L L V L S S L T L V G T V I A L 71

FIG. 13



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

1768 ACT GTT GCA ACA CCT CTG CTC GTT ATC TTC AGC CCA ATC CTT GTC CCG GCT CTC ATC ACA 1827
72 T V A T P L L V I F S P I L V P A L I T 91

1828 GTT GCA CTC CTC ATC ACC GGT TTT CTT TCC TCT GGA GGG TTT GGC ATT GCC GCT ATA ACC 1887
92 V A L L I T G F L S S G G F G I A A I T 111

1888 GTT TTC TCT TGG ATT TAC AA *gtaagcacacatttatcatcttacttcataat* *ttt*gtgcaatatgtgcatgca 1960
112 V F S W I Y K 118

1961 tgtgttgagccagtagctttggatcaat

2041 cttttggttaactaaatacgaaat

2121 ggtatgatacctattgattgtgaatag G TAC GCA ACG GGA GAG CAC CCA CAG GGA TCA GAC AAG 2184
119 Y A T G E H P Q G S D K 130

2185 TTG GAC AGT GCA AGG ATG AAG TTG GGA AGC AAA GCT CAG GAT CTG AAA GAC AGA GCT CAG 2244
131 L D S A R M K L G S K A Q D L K D R A Q 150

2245 TAC TAC GGA CAG CAA CAT ACT GGT GGG GAA CAT GAC CGT GAC CGT ACT CGT GGT GGC CAG 2304
151 Y Y G Q Q H T G G E H D R D R T R G G Q 170

NcoI

2305 CAC ACT ACC ATG GCT TCG GAA GAA GGA CAA GTG ATC GCC TGC CAC ACC GTT GAG ACA TGG 2364
171 H T T M A S E E G Q V I A C H T V E T W 190

2365 AAC GAG CAG CTT CAG AAG GCT AAT GAA TCC AAA ACT CTT GTG GTG GTT GAT TTC ACG GCT 2424
191 N E Q L Q K A N E S K T L V V V D F T A 210

2425 TCT TGG TGT GGA CCA TGT CGT TTC ATC GCT CCA TTC TTT GCT GAT TTG GCT AAG AAA CTT 2484
211 S W C G P C R F I A P F F A D L A K K L 230

2485 CCT AAC GTG CTT TTC CTC AAG GTT GAT ACT GAT GAA TTG AAG TCG GTG GCA AGT GAT TGG 2544
231 P N V L F L K V D T D E L K S V A S D W 250

2545 GCG ATA CAG GCG ATG CCA ACC TTC ATG TTT TTG AAG GAA GGG AAG ATT TTG GAC AAA GTT 2604
251 A I Q A M P T F M F L K E G K I L D K V 270

2605 GTT GGA GCC AAG AAA GAT GAG CTT CAG TCT ACC ATT GCC AAA CAC TTG GCT TAA gcttaata 2666
271 V G A K K D E L Q S T I A K H L A * 288

2667 agtatgaactaaatgcatgtaggtgtaagagctcatggagagcatggaatattgtatccgacctgtaacagtataata 2746

2747 actgagctccatctcacttcttctatgaataaacaaggatggtatgatataattaacactctatctatgcaccttattgt 2826

2827 tctatgataaatttcctcttattattataaatcatctgaatcgtagcggttatggaatgcttcaaatagtacaaaaaca 2906

2907 aatgtgtactataagacttttctaacaattctaacttttagcattgtgaacgagacataagtgttaagaagacataacaat 2986

2987 tataatggaagaagtttgtctccatttatattatatattaccacttatgtattatattaggatgttaaggagacata 3066

FIG. 13A



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

3067 acaattataaagagagaagtttgatccatttatattatataactaccatttatattatacttatccacttattta 3146
3147 atgtctttataaggtttgatccatgatatttctaataattttagttgatatgtatatgaaaggtactatttgaactctct 3226
3227 tactctgtataaaggtttgatcatccttaaagtgggtctatttaattttattgcttcttacagataaaaaaaaaattatg 3306
3307 agttggtttgataaaatattgaaggattttaaataataataataataataacatataatatgtatataaatttatt 3386
3387 ataataaacatttatctataaaaaagtaaattgtcataaatctatacaatcgtttagccttgctggacgactctcaa 3466
3467 ttatttaaacgagagtaaacaatttgactttttggttatttaacaaattattatttaacactatatgaaatttttttt 3546
3547 tttatcggcaaggaaataaaattaaattaggagggacaatggtgtgtcccaatccttatacaaccaactccacaggaag 3626
3627 gtcaggtcggggacaacaaaaaacaggcaagggaatttttaatttggttgcttctgtttgctgcataatttatgcag 3706
3707 taaaacactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagcttcttttattttattttttatc 3786
3787 agcaaagaataaaataaaataaatgagacacttcagggatgtttcaacccttatacaaaaccccaaaaacaagtttccta 3866
3867 gcaccctaccaactaaggtacc 3888

KpnI

FIG. 13B



PstI
1 ctgcaggaattcattgtactcccagtatcattatagtgaagtttggctctctcgccggtggttttttacctctattta 80
81 aagggttttccacctaataattctggtatcattctcactttacttgttactttaatttctcataatctttggttgaaat 160
161 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaacattttcaaaccgcataaaattttatgaagtc 240
241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcggttgtagaaagcataa 320
321 tgatttattcttattcttcttcatataaatgtttaatatataaataaacaattctttaccttaagaaggatttcccat 400
401 tttatattttaaaaatatatttatcaaataattttcaaccacgtaaattctcataataataagttgtttcaaaagtaataa 480
481 aatttaactccataatttttttattcgactgatcttaaagcaacacccagtgacacaactagccattttttctttgaat 560
561 aaaaaatccaattatcattgtatttttttatacaatgaaaatttcaccaacaacatttgtggtatttctgaagcaa 640
641 gtcattgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgctttacatgagacacat 720
721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800
801 ttagatataattaaaattacttttttaattttaagtttaattgttgaattgtgactattgatttatttctactat 880
881 gtttaaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgttagagtgttacctaaccataaac 960
961 tataagatttatggtggactaattttcatatatttcttattgcttttaccttttcttggtatgtaagtcgtaactggaa 1040
1041 ttactgtgggttgccatggcactctgtggtcttttggttcatgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120
1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200
1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca 1280
1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttcactt 1360
1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccaaatctccatgcatgttccaaccaccttctcttataata 1440
1441 atacctataaataacctctaatatcactcacttctttcatcatccatccatccagagtactactctactactataata 1520
1521 ccccaaccaactcatattcaataactacttact ATG GCT TCG GAA GAA GGA CAA GTG ATC GCC TGC 1587
1 M A S E E G Q V I A C 11
1588 CAC ACC GTT GAG ACA TGG AAC GAG CAG CTT CAG AAG GCT AAT GAA TCC AAA ACT CTT GTG 1647
12 H T V E T W N E Q L Q K A N E S K T L V 31
1648 GTG GTT GAT TTC ACG GCT TCT TGG TGT GGA CCA TGT CGT TTC ATC GCT CCA TTC TTT GCT 1707
32 V V D F T A S W C G P C R F I A P F F A 51
1708 GAT TTG GCT AAG AAA CTT CCT AAC GTG CTT TTC CTC AAG GTT GAT ACT GAT GAA TTG AAG 1767
52 D L A K K L P N V L F L K V D T D E L K 71

FIG. 14



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

1768 TCG GTG GCA AGT GAT TGG GCG ATA CAG GCG ATG CCA ACC TTC ATG TTT TTG AAG GAA GGG 1827
72 S V A S D W A I Q A M P T F M F L K E G 91

1828 AAG ATT TTG GAC AAA GTT GTT GGA GCC AAG AAA GAT GAG CTT CAG TCT ACC ATT GCC AAA 1887
92 K I L D K V V G A K K D E L Q S T I A K 111

1888 CAC TTG GCT ATG GCG GAT ACA GCT AGA GGA ACC CAT CAC GAT ATC ATC GGC AGA GAC CAG 1947
112 H L A M A D T A R G T H H D I I G R D Q 131

1948 TAC CCG ATG ATG GGC CGA GAC CGA GAC CAG TAC CAG ATG TCC GGA CGA GGA TCT GAC TAC 2007
132 Y P M M G R D R D Q Y Q M S G R G S D Y 151

2008 TCC AAG TCT AGG CAG ATT GCT AAA GCT GCA ACT GCT GTC ACA GCT GGT GGT TCC CTC CTT 2067
152 S K S R Q I A K A A T A V T A G G S L L 171

2068 GTT CTC TCC AGC CTT ACC CTT GTT GGA ACT GTC ATA GCT TTG ACT GTT GCA ACA CCT CTG 2127
172 V L S S L T L V G T V I A L T V A T P L 191

2128 CTC GTT ATC TTC AGC CCA ATC CTT GTC CCG GCT CTC ATC ACA GTT GCA CTC CTC ATC ACC 2187
192 L V I F S P I L V P A L I T V A L L I T 211

2188 GGT TTT CTT TCC TCT GGA GGG TTT GGC ATT GCC GCT ATA ACC GTT TTC TCT TGG ATT TAC 2247
212 G F L S S G G F G I A A I T V F S W I Y 231

2248 AA gtaagcacacatttatcatcttacttcataatgtgtgcaatatgtgcatgcatgtgttgagccagtagctttggat 2326
232 K 232

2327 caatttttttggtcgaataacaaatgtaacaataagaaattgcaaattctaggaacatttggttaactaaatacgaat 2406

2407 ttgacctagctagcttgatgtgtctgtgtatatcatctatataggtaaatgcttggtatgatacctattgattgtgaa 2486

2487 tag G TAC GCA ACG GGA GAG CAC CCA CAG GGA TCA GAC AAG TTG GAC AGT GCA AGG ATG 2544
233 Y A T G E H P Q G S D K L D S A R M 250

2545 AAG TTG GGA AGC AAA GCT CAG GAT CTG AAA GAC AGA GCT CAG TAC TAC GGA CAG CAA CAT 2604
251 K L G S K A Q D L K D R A Q Y Y G Q Q H 270

HindIII

2605 ACT GGT GGG GAA CAT GAC CGT GAC CGT ACT CGT GGT GGC CAG CAC ACT ACT TAA gcttaata 2666
271 T G G E H D R D R T R G G Q H T T * 288

2667 agtatgaactaaaatgcatgtaggtgtaagagctcatggagagcatggaatattgtatccgacctgtaacagtataata 2746

2747 actgagctccatctcacttcttctatgaataaacaaggatgttatgatattaacactctatctatgcaccttattgt 2826

2827 tctatgataaatttctcttattattataaatcatctgaatcgtgacggcttatggaatgcttcaaatagtacaaaaaca 2906

2907 aatgtgtactataagacttttctaacaattctaacttttagcattgtgaacgagacataagtgttaagaagacataacaat 2986

2987 tataatggaagaagttgtctccatttatatttatattaccacttatgtattatattaggatgttaaggagacata 3066

FIG. 14A



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

3067 acaattataaagagagaagtttgatccatttatattatataactacccatttatattatacttatccacttattta 3146
3147 atgtctttataaggtttgatccatgatatttctaataattttagttgatatgtatatgaaaggtactatttgaactctct 3226
3227 tactctgtataaaggttggatcatccttaaagtgggtctatttaattttattgcttcttacagataaaaaaaaaattatg 3306
3307 agttggtttgataaaatattgaaggattttaaataataataataataaacatataatatgtatataaatttatt 3386
3387 ataataacatttatctataaaaaagtaaattgtcataaatctatacaatcgtttagccttgctggacgactctcaa 3466
3467 ttatttaaacgagagtaaacatatttgactttttggttatttaacaaattattatttaacactatatgaaatttttttt 3546
3547 tttatcggcaaggaaataaaattaaattaggagggacaatggtgtgtcccaatccttatacaaccaacttccacaggaag 3626
3627 gtcaggtcggggacaacaaaaaacaggcaagggaattttttaatttgggttgcttggttgctgcataatttatgcag 3706
3707 taaaacactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagcttctttattttattttttatc 3786
3787 agcaaagaataaaataaaataaatgagacacttcagggatgtttcaacccttatacaaaaccccaaaaacaagtttccta 3866
3867 gcaccctaccaactaaggtacc 3888

KpnI

FIG. 14B



PstI

1 ctgcaggaattcattgtactcccagtatcattatagtgaaagtttggctctctcgccggtgggttttttacctctattta 80
81 aaggggtttccacctaataattctggtatcattctcactttacttgttactttaatttctcataatctttggttgaaat 160
161 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaacattttcaaaccgcataaaattttatgaagtc 240
241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcggttggtagaagcataa 320
321 tgatttattcttattcttcttcatataaatgtttaatatataaacaatttctttaccttaagaaggatttcccat 400
401 tttatattttaaaaatatatttatcaaataattttcaaccacgtaaatctcataataataagttgtttcaaagtaataa 480
481 aatttaactccataatttttttattcgactgatcttaagcaacaccagtgacacaactagccattttttctttgaat 560
561 aaaaaatccaattatcattgtatttttttatacaatgaaaatttcaccaacaacatttgtggtatttctgaagcaa 640
641 gtcattgtatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgagagacacat 720
721 cttctaaagtaattttaataatagttactatattcaagatttcataatcaaatactcaatattacttctaaaaaattaa 800
801 ttagatataattaaaatattacttttttaattttaagtttaattgttgattttgtgactattgatttatttctactat 880
881 gtttaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgttagagtgttaccctaaaccataaac 960
961 tataagatttatggtggactaattttcatatatttcttattgcttttaccttttcttggtatgtaagtccgtaactggaa 1040
1041 ttactgtgggttgccatggcactctgtggtcttttgggtcatgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120
1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200
1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca 1280
1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattcttccgccacctcaatttcttactt 1360
1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccc aaatctccatgcatgttccaaccaccttctctcttatata 1440
1441 atacctataaatacctctaataatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520
1521 ccccaaccaactcatattcaataactactctact ATG AAT GGT CTC GAA ACT CAC AAC ACA AGG CTC 1587
1 M N G L E T H N T R L 11
1588 TGT ATC GTA GGA AGT GGC CCA GCG GCA CAC ACG GCG GCG ATT TAC GCA GCT AGG GCT GAA 1647
12 C I V G S G P A A H T A A I Y A A R A E 31
1648 CTT AAA CCT CTT CTC TTC GAA GGA TGG ATG GCT AAC GAC ATC GCT CCC GGT GGT CAA CTA 1707
32 L K P L L F E G W M A N D I A P G G Q L 51
1708 ACA ACC ACC ACC GAC GTC GAG AAT TTC CCC GGA TTT CCA GAA GGT ATT CTC GGA GTA GAG 1767
52 T T T T D V E N F P G F P E G I L G V E 71

FIG. 15



1768 CTC ACT GAC AAA TTC CGT AAA CAA TCG GAG CGA TTC GGT ACT ACG ATA TTT ACA GAG ACG 1827
72 L T D K F R K Q S E R F G T T I F T E T 91
1828 GTG ACG AAA GTC GAT TTC TCT TCG AAA CCG TTT AAG CTA TTC ACA GAT TCA AAA GCC ATT 1887
92 V T K V D F S S K P F K L F T D S K A I 111
1888 CTC GCT GAC GCT GTG ATT CTC GCT ACT GGA GCT GTG GCT AAG CGG CTT AGC TTC GTT GGA 1947
112 L A D A V I L A T G A V A K R L S F V G 131
1948 TCT GGT GAA GGT TCT GGA GGT TTC TGG AAC CGT GGA ATC TCC GCT TGT GCT GTT TGC GAC 2007
132 S G E G S G G F W N R G I S A C A V C D 151
2008 GGA GCT GCT CCG ATA TTC CGT AAC AAA CCT CTT GCG GTG ATC GGT GGA GGC GAT TCA GCA 2067
152 G A A P I F R N K P L A V I G G G D S A 171
2068 ATG GAA GAA GCA AAC TTT CTT ACA AAA TAT GGA TCT AAA GTG TAT ATA ATC CAT AGG AGA 2127
172 M E E A N F L T K Y G S K V Y I I H R R 191
2128 GAT GCT TTT AGA GCG TCT AAG ATT ATG CAG CAG CGA GCT TTG TCT AAT CCT AAG ATT GAT 2187
92 D A F R A S K I M Q Q R A L S N P K I D 211
2188 GTG ATT TGG AAC TCG TCT GTT GTG GAA GCT TAT GGA GAT GGA GAA AGA GAT GTG CTT GGA 2247
212 V I W N S S V V E A Y G D G E R D V L G 231
2248 GGA TTG AAA GTG AAG AAT GTG GTT ACC GGA GAT GTT TCT GAT TTA AAA GTT TCT GGA TTG 2307
232 G L K V K N V V T G D V S D L K V S G L 251
2308 TTC TTT GCT ATT GGT CAT GAG CCA GCT ACC AAG TTT TTG GAT GGT GGT GTT GAG TTA GAT 2367
252 F F A I G H E P A T K F L D G G V E L D 271
2368 TCG GAT GGT TAT GTT GTC ACG AAG CCT GGT ACT ACA CAG ACT AGC GTT CCC GGA GTT TTC 2427
272 S D G Y V V T K P G T T Q T S V P G V F 291
2428 GCT GCG GGT GAT GTT CAG GAT AAG AAG TAT AGG CAA GCC ATC ACT GCT GCA GGA ACT GGG 2487
292 A A G D V Q D K K Y R Q A I T A A G T G 311
2488 TGC ATG GCA GCT TTG GAT GCA GAG CAT TAC TTA CAA GAG ATT GGA TCT CAG CAA GGT AAG 2547
312 C M A A L D A E H Y L Q E I G S Q Q G K 331
2548 AGT GAT TGA agcttaataagatgaactaaaatgcatgtaggtgtaagagctcatggagagcatggaatattgtatc 2624
332 S D * HindIII 334
2625 cgaccatgtaacagtataataactgagctccatctcacttcttctatgaataaacaaggatgttatgatatattaacac 2704
2705 tctatctatgcaccttattgttctatgataaatttcttctattattataaatcatctgaatcgtgacggcttatggaat 2784
2785 gcttcaaatagtacaaaaacaatgtgtactataagactttctaacaattctaacttttagcattgtgaacgagacataa 2864
2865 gtgttaagaagacataacaattataatggaagaagtttgtctcatttatattatatattaccacttatgtattata 2944

FIG. 15A



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

2945 ttaggatgttaaggagacataacaattataaagagagaagtttgatccatttatatattatataactacccatttatata 3024
3025 ttatacttatccacttatttaatgtctttataagggttgatccatgatatttctaataattttagttgatatgtatatgaa 3104
3105 agggactatttgaactctcttactctgtataaagggttgatcatccttaaagtggtctatttaattttattgcttctt 3184
3185 acagataaaaaaaaaattatgagttgggttgataaaatattgaaggatttaaataataataataataataacatata 3264
3265 atatatgtatataaatttattataatataacatttatctataaaaaagtaaattgtcataaatctatacaatcgttta 3344
3345 gccttgctggacgactctcaatttttaaacgagagtaaacatatttgactttttggttatttaacaaattattatttaa 3424
3425 cactatatgaaattttttttttttatcggaaggaaataaaattaaattaggagggaacaatggtgtgtcccaatccttat 3504
3505 acaaccaactccacaggaaggtcaggtcggggacaacaaaaaacaggcaagggaattttttaatttgggttgcttg 3584
3585 tttgctgcataatttatgcagtaaaactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagctt 3664
3665 cttttattttattttttttatcagcaaagaataaaaaataaaatgagacacttcagggatgtttcaacccttatataaaa 3744
3745 accccaaaaacaagtttcctagcaccctaccaactaaggtacc 3787

KpnI

FIG. 15B



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

PstI
1 ctgcaggaattcattgtactcccagtatcattatagtgaaagtttggctctctgccggtggtttttacctctattta 80
81 aaggggtttccacctaataattctggtatcattctcactttacttggtactttaattttcataatctttggttgaat 160
161 tatcacgcttcgcacacgatatccctacaaatttattttgttaaacattttcaaaccgcataaaattttatgaagtc 240
241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaattttagcgttggttagaaagcataa 320
321 tgattttattcttattcttcttcatataaatgtttaatatataaacaattctttaccttaagaaggatttcccat 400
401 tttatattttaaaaatatatttatcaaataattttcaaccacgtaaattctcataataataagttgtttcaaagtaataa 480
481 aatttaactccataatttttttattcgactgatcttaagcaacaccagtgacacaactagccattttttctttgaat 560
561 aaaaaatccaattatcattgtatttttttatacaatgaaaatttcaccaacaacatttggtggtattttctgaagcaa 640
641 gtcattgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgagagacacat 720
721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800
801 ttagatataattaaaatattacttttttaattttaagtttaattgttgattgtgactattgatttatttctactat 880
881 gtttaaatgttttatagatagtttaagtaaatataagtaatgtagtagtggttagagtggtaccctaaaccataaac 960
961 tataagatttatggtggactaattttcatatatttcttattgcttttaccttttcttggtatgtaagtcgtaactggaa 1040
1041 ttactgtgggttgccatggcactctgtggtcttttggttcattgcatggtgcttgcgcaagaaaaagacaaagacaaag 1120
1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200
1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca 1280
1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttactt 1360
1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccc aaatctccatgcatgttccaaccaccttctcttataata 1440
1441 atacctataaaataacctctaataatcactcacttctttcatcatccatccatccagagtactactactactataata 1520
1521 ccccaaccaactcatattcaataactactctact ATG GCG GAT ACA GCT AGA GGA ACC CAT CAC GAT 1587
1 M A D T A R G T H H D 11
1588 ATC ATC GGC AGA GAC CAG TAC CCG ATG ATG GGC CGA GAC CGA GAC CAG TAC CAG ATG TCC 1647
12 I I G R D Q Y P M M G R D R D Q Y Q M S 31
1648 GGA CGA GGA TCT GAC TAC TCC AAG TCT AGG CAG ATT GCT AAA GCT GCA ACT GCT GTC ACA 1707
32 G R G S D Y S K S R Q I A K A A T A V T 51
1708 GCT GGT GGT TCC CTC CTT GTT CTC TCC AGC CTT ACC CTT GTT GGA ACT GTC ATA GCT TTG 1767

FIG. 16



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

52 A G G S L L V L S S L T L V G T V I A L 71

1768 ACT GTT GCA ACA CCT CTG CTC GTT ATC TTC AGC CCA ATC CTT GTC CCG GCT CTC ATC ACA 1827
72 T V A T P L L V I F S P I L V P A L I T 91

1828 GTT GCA CTC CTC ATC ACC GGT TTT CTT TCC TCT GGA GGG TTT GGC ATT GCC GCT ATA ACC 1887
92 V A L L I T G F L S S G G F G I A A I T 111

1888 GTT TTC TCT TGG ATT TAC AA gtaagcacacatttatcatcttacttcataatgtgcaatatgtgcatgca 1960
112 V F S W I Y K 118

1961 tgtgttgagccagtagctttggatcaatgttttttggcgaataacaaatgtaacaataagaaattgcaaattctagggaa 2040

2041 catttggttaactaaatacgaatgttgacctagctagcttgatgtgtctgtgtatatcatctatataggtaaatgctt 2120

2121 ggtatgatacctattgattgtgaatag G TAC GCA ACG GGA GAG CAC CCA CAG GGA TCA GAC AAG 2184
119 Y A T G E H P Q G S D K 130

2185 TTG GAC AGT GCA AGG ATG AAG TTG GGA AGC AAA GCT CAG GAT CTG AAA GAC AGA GCT CAG 2244
131 L D S A R M K L G S K A Q D L K D R A Q 150

2245 TAC TAC GGA CAG CAA CAT ACT GGT GGG GAA CAT GAC CGT GAC CGT ACT CGT GGT GGC CAG 2304
151 Y Y G Q Q H T G G E H D R D R T R G G Q 170

2305 CAC ACT ACC ATG AAT GGT CTC GAA ACT CAC AAC ACA AGG CTC TGT ATC GTA GGA AGT GGC 2364
171 H T T M N G L E T H N T R L C I V G S G 190

2365 CCA GCG GCA CAC ACG GCG GCG ATT TAC GCA GCT AGG GCT GAA CTT AAA CCT CTT CTC TTC 2424
191 P A A H T A A I Y A A R A E L K P L L F 210

2425 GAA GGA TGG ATG GCT AAC GAC ATC GCT CCC GGT GGT CAA CTA ACA ACC ACC ACC GAC GTC 2484
211 E G W M A N D I A P G G Q L T T T T D V 230

2485 GAG AAT TTC CCC GGA TTT CCA GAA GGT ATT CTC GGA GTA GAG CTC ACT GAC AAA TTC CGT 2544
231 E N F P G F P E G I L G V E L T D K F R 250

2545 AAA CAA TCG GAG CGA TTC GGT ACT ACG ATA TTT ACA GAG ACG GTG ACG AAA GTC GAT TTC 2604
251 K Q S E R F G T T I F T E T V T K V D F 270

2605 TCT TCG AAA CCG TTT AAG CTA TTC ACA GAT TCA AAA GCC ATT CTC GCT GAC GCT GTG ATT 2664
271 S S K P F K L F T D S K A I L A D A V I 290

2665 CTC GCT ACT GGA GCT GTG GCT AAG CGG CTT AGC TTC GTT GGA TCT GGT GAA GGT TCT GGA 2724
291 L A T G A V A K R L S F V G S G E G S G 310

2725 GGT TTC TGG AAC CGT GGA ATC TCC GCT TGT GCT GTT TGC GAC GGA GCT GCT CCG ATA TTC 2784
311 G F W N R G I S A C A V C D G A A P I F 330

2785 CGT AAC AAA CCT CTT GCG GTG ATC GGT GGA GGC GAT TCA GCA ATG GAA GAA GCA AAC TTT 2844
331 R N K P L A V I G G G D S A M E E A N F 350

FIG. 16A



2845 CTT ACA AAA TAT GGA TCT AAA GTG TAT ATA ATC CAT AGG AGA GAT GCT TTT AGA GCG TCT 2904
351 L T K Y G S K V Y I I H R R D A F R A S 370

2905 AAG ATT ATG CAG CAG CGA GCT TTG TCT AAT CCT AAG ATT GAT GTG ATT TGG AAC TCG TCT 2964
371 K I M Q Q R A L S N P K I D V I W N S S 390

2965 GTT GTG GAA GCT TAT GGA GAT GGA GAA AGA GAT GTG CTT GGA GGA TTG AAA GTG AAG AAT 3024
391 V V E A Y G D G E R D V L G G L K V K N 410

3025 GTG GTT ACC GGA GAT GTT TCT GAT TTA AAA GTT TCT GGA TTG TTC TTT GCT ATT GGT CAT 3084
411 V V T G D V S D L K V S G L F F A I G H 430

3085 GAG CCA GCT ACC AAG TTT TTG GAT GGT GGT GTT GAG TTA GAT TCG GAT GGT TAT GTT GTC 3144
431 E P A T K F L D G G V E L D S D G Y V V 450

3145 ACG AAG CCT GGT ACT ACA CAG ACT AGC GTT CCC GGA GTT TTC GCT GCG GGT GAT GTT CAG 3204
451 T K P G T T Q T S V P G V F A A G D V Q 470

3205 GAT AAG AAG TAT AGG CAA GCC ATC ACT GCT GCA GGA ACT GGG TGC ATG GCA GCT TTG GAT 3264
471 D K K Y R Q A I T A A G T G C M A A L D 490

3265 GCA GAG CAT TAC TTA CAA GAG ATT GGA TCT CAG CAA GGT AAG AGT GAT TGA agcttaataagt 3327
491 A E H Y L Q E I G S Q Q G K S D * HindIII 507

3328 atgaactaaatgcatgtaggtgaagagctcatggagagcatggaatattgtatccgacctgtaacagtataataact 3407

3408 gagctccatctcacttcttctatgaataaacaaggatgttatgatataattaacactctatctatgcaccttattgttct 3487

3488 atgataaatttctcttattattataaatcatctgaatcgtgacggcttatggaatgcttcaaatagtagtaaaaaacaaat 3567

3568 gtgtactataagacttttctaacaattctaacttttagcattgtgaacgagacataagtgttaagaagacataacaattat 3647

3648 aatggaagaagtttgtctccatttatattatataactaccacttatgtattatattaggatgttaaggagacataaca 3727

3728 attataaagagagaagtttgtatccatttatattatataactaccatttatattataacttatccacttatttaatg 3807

3808 tctttataagggttgatccatgatatttctaataatttttagttgatatgtatatgaaagggactatttgaactctcttac 3887

3888 tctgtataaagggttgatcatccttaaagtgggtctatttaattttatttgcttcttacagataaaaaaaaaattatgagt 3967

3968 tggtttgataaaatattgaaggatttaaaataataataaataaataacatataatataatgtatataaatttattata 4047

4048 atataacatttatctataaaaaagtaaatattgtcataaatctatacaatcgtttagccttgctggacgactctcaatta 4127

4128 tttaaacgagagtaaacatatttgacttttttggttatttaacaaattattatttaacactatatgaaattttttttttt 4207

4208 atcggcaaggaaataaaattagtagggacaatggtgtgtcccaatccttatacaaccaactccacaggaagggtc 4287

FIG. 16B



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

4288 aggtcggggacaacaaaaaacaggcaagggaaatttttaatttgggttgtcttgtttgctgcataatttatgcagtaa 4367
4368 aacactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagcttctttattttattttttatcagc 4447
4448 aaagaataaataaaaataaaatgagacacttcagggatgtttcaacccttatacaaaaccccaaaaacaagtttcctagca 4527
4528 ccctaccaactaaggtacc 4546
KpnI

FIG. 16C



PstI
1 ctgcaggaattcattgtactcccagtatcattatagtgaagttttggctctctcgccggtggtttttacctctattta 80
81 aaggggtttccacctaataattctggtatcattctcactttacttggtactttaatttctcataatctttggttgaat 160
161 tatcacgcttccgcacagatatccctacaaatttattatttggtaaacattttcaaaccgcataaaattttatgaagtc 240
241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcggttggtagaagcataa 320
321 tgatttattcttattcttcttcatataaatgtttaatatatacaataataaacaattctttacctaagaaggatttcccat 400
401 tttatattttaaaaatatatttatcaaataattttcaaccacgtaaatctcataataataagttgtttcaaaagtaataa 480
481 aatttaactccataatttttttattcgactgatcttaagcaacacccagtgacacaactagccattttttctttgaat 560
561 aaaaaatccaattatcattgtatttttttatacaatgaaaatttcaccaaacaatcatttggttatttctgaagcaa 640
641 gtcattgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720
721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800
801 ttagatataattaaaatattacttttttaattttaagtttaattgttgactattgatttattattctactat 880
881 gtttaaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgtagagtggtaccctaaccataaac 960
961 tataagatttatggtggactaattttcatataatttcttattgcttttaccttttcttggtatgtaagtcgtaactggaa 1040
1041 ttactgtgggttgccatggcactctgtggtcttttggttcatgcatggatgcttgcgcaagaaaagacaaagaacaaag 1120
1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200
1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca 1280
1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttcgccacctcaatttcttcaatt 1360
1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccc aaatctccatgcatgttccaaccaccttctctcttatata 1440
1441 atacctataaatacctctaataatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520
1521 ccccaaccaactcatattcaataactactctact ATG AAT GGT CTC GAA ACT CAC AAC ACA AGG CTC 1587
1 M N G L E T H N T R L 11
1588 TGT ATC GTA GGA AGT GGC CCA GCG GCA CAC ACG GCG GCG ATT TAC GCA GCT AGG GCT GAA 1647
12 C I V G S G P A A H T A A I Y A A R A E 31
1648 CTT AAA CCT CTT CTC TTC GAA GGA TGG ATG GCT AAC GAC ATC GCT CCC GGT GGT CAA CTA 1707
32 L K P L L F E G W M A N D I A P G G Q L 51
1708 ACA ACC ACC ACC GAC GTC GAG AAT TTC CCC GGA TTT CCA GAA GGT ATT CTC GGA GTA GAG 1767
52 T T T T D V E N F P G F P E G I L G V E 71

FIG. 17



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

1768	CTC	ACT	GAC	AAA	TTC	CGT	AAA	CAA	TCG	GAG	CGA	TTC	GGT	ACT	ACG	ATA	TTT	ACA	GAG	ACG	1827
72	L	T	D	K	F	R	K	Q	S	E	R	F	G	T	T	I	F	T	E	T	91
1828	GTG	ACG	AAA	GTC	GAT	TTC	TCT	TCG	AAA	CCG	TTT	AAG	CTA	TTC	ACA	GAT	TCA	AAA	GCC	ATT	1887
92	V	T	K	V	D	F	S	S	K	P	F	K	L	F	T	D	S	K	A	I	111
1888	CTC	GCT	GAC	GCT	GTG	ATT	CTC	GCT	ACT	GGA	GCT	GTG	GCT	AAG	CGG	CTT	AGC	TTC	GTT	GGA	1947
112	L	A	D	A	V	I	L	A	T	G	A	V	A	K	R	L	S	F	V	G	131
1948	TCT	GGT	GAA	GGT	TCT	GGA	GGT	TTC	TGG	AAC	CGT	GGA	ATC	TCC	GCT	TGT	GCT	GTT	TGC	GAC	2007
132	S	G	E	G	S	G	G	F	W	N	R	G	I	S	A	C	A	V	C	D	151
2008	GGA	GCT	GCT	CCG	ATA	TTC	CGT	AAC	AAA	CCT	CTT	GCG	GTG	ATC	GGT	GGA	GGC	GAT	TCA	GCA	2067
152	G	A	A	P	I	F	R	N	K	P	L	A	V	I	G	G	G	D	S	A	171
2068	ATG	GAA	GAA	GCA	AAC	TTT	CTT	ACA	AAA	TAT	GGA	TCT	AAA	GTG	TAT	ATA	ATC	CAT	AGG	AGA	2127
172	M	E	E	A	N	F	L	T	K	Y	G	S	K	V	Y	I	I	H	R	R	191
2128	GAT	GCT	TTT	AGA	GCG	TCT	AAG	ATT	ATG	CAG	CAG	CGA	GCT	TTG	TCT	AAT	CCT	AAG	ATT	GAT	2187
192	D	A	F	R	A	S	K	I	M	Q	Q	R	A	L	S	N	P	K	I	D	211
2188	GTG	ATT	TGG	AAC	TCG	TCT	GTT	GTG	GAA	GCT	TAT	GGA	GAT	GGA	GAA	AGA	GAT	GTG	CTT	GGA	2247
212	V	I	W	N	S	S	V	V	E	A	Y	G	D	G	E	R	D	V	L	G	231
2248	GGA	TTG	AAA	GTG	AAG	AAT	GTG	GTT	ACC	GGA	GAT	GTT	TCT	GAT	TTA	AAA	GTT	TCT	GGA	TTG	2307
232	G	L	K	V	K	N	V	V	T	G	D	V	S	D	L	K	V	S	G	L	251
2308	TTC	TTT	GCT	ATT	GGT	CAT	GAG	CCA	GCT	ACC	AAG	TTT	TTG	GAT	GGT	GGT	GTT	GAG	TTA	GAT	2367
252	F	F	A	I	G	H	E	P	A	T	K	F	L	D	G	G	V	E	L	D	271
2368	TCG	GAT	GGT	TAT	GTT	GTC	ACG	AAG	CCT	GGT	ACT	ACA	CAG	ACT	AGC	GTT	CCC	GGA	GTT	TTC	2427
272	S	D	G	Y	V	V	T	K	P	G	T	T	Q	T	S	V	P	G	V	F	291
2428	GCT	GCG	GGT	GAT	GTT	CAG	GAT	AAG	AAG	TAT	AGG	CAA	GCC	ATC	ACT	GCT	GCA	GGA	ACT	GGG	2487
292	A	A	G	D	V	Q	D	K	K	Y	R	Q	A	I	T	A	A	G	T	G	311
2488	TGC	ATG	GCA	GCT	TTG	GAT	GCA	GAG	CAT	TAC	TTA	CAA	GAG	ATT	GGA	TCT	CAG	CAA	GGT	AAG	2547
312	C	M	A	A	L	D	A	E	H	Y	L	Q	E	I	G	S	Q	Q	G	K	331
2548	AGT	GAT	ATG	GCG	GAT	ACA	GCT	AGA	GGA	ACC	CAT	CAC	GAT	ATC	ATC	GGC	AGA	GAC	CAG	TAC	2607
332	S	D	M	A	D	T	A	R	G	T	H	H	D	I	I	G	R	D	Q	Y	351
2608	CCG	ATG	ATG	GGC	CGA	GAC	CGA	GAC	CAG	TAC	CAG	ATG	TCC	GGA	CGA	GGA	TCT	GAC	TAC	TCC	2667
352	P	M	M	G	R	D	R	D	Q	Y	Q	M	S	G	R	G	S	D	Y	S	371
2668	AAG	TCT	AGG	CAG	ATT	GCT	AAA	GCT	GCA	ACT	GCT	GTC	ACA	GCT	GGT	GGT	TCC	CTC	CTT	GTT	2727
372	K	S	R	Q	I	A	K	A	A	T	A	V	T	A	G	G	S	L	L	V	391

FIG. 17A



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

2728 CTC TCC AGC CTT ACC CTT GTT GGA ACT GTC ATA GCT TTG ACT GTT GCA ACA CCT CTG CTC 2787
392 L S S L T L V G T V I A L T V A T P L L 411
2788 GTT ATC TTC AGC CCA ATC CTT GTC CCG GCT CTC ATC ACA GTT GCA CTC CTC ATC ACC GGT 2847
412 V I F S P I L V P A L I T V A L L I T G 431
2848 TTT CTT TCC TCT GGA GGG TTT GGC ATT GCC GCT ATA ACC GTT TTC TCT TGG ATT TAC AA g 2907
432 F L S S G G F G I A A I T V F S W I Y K 451
2908 taagcacacatttatcatcttacttcataatgttgcaatatgtgcatgcatgtgttgagccagtagctttggatcaat 2987
2988 ttttttggtcgaataacaaatgtaacaataagaaattgcaaattctagggacatttggttaactaaatacgaaatttga 3067
3068 cctagctagcttgaatgtgtctgtgtatatcatctatataggtaaaatgcttggtatgatacctattgattgtgaatag 3146
3147 G TAC GCA ACG GGA GAG CAC CCA CAG GGA TCA GAC AAG TTG GAC AGT GCA AGG ATG AAG 3204
452 Y A T G E H P Q G S D K L D S A R M K 470
3205 TTG GGA AGC AAA GCT CAG GAT CTG AAA GAC AGA GCT CAG TAC TAC GGA CAG CAA CAT ACT 3264
471 L G S K A Q D L K D R A Q Y Y G Q Q H T 490
3265 GGT GGG GAA CAT GAC CGT GAC CGT ACT CGT GGT GGC CAG CAC ACT ACT TAA gcttaataagta 3327
491 G G E H D R D R T R G G Q H T T * HindIII 507
3328 tgaactaaaatgcatgtaggtgtaagagctcatggagagcatggaatattgtatccgaccatgtaacagtataataactg 3407
3408 agctccatctcacttcttctatgaataaacaaggatgttatgatataacactctatctatgcaccttattgttcta 3487
3488 tgataaatttcctcttattattataaatcatctgaatcgtgacggcttatggaatgcttcaaatagtacaaaaacaaatg 3567
3568 tgtactataagacttttctaacaattctaacttttagcattgtgaacgagacataagtgttaagaagacataacaattata 3647
3648 atggaagaagtttgtctccatttatattatatattaccacttatgtattatattaggatgttaaggagacataacaa 3727
3728 ttataaagagagaagtttgtatccatttatattatataactaccatttatattatacttatccacttatttaagt 3807
3808 ctttataaggtttgatccatgatatttctaataattttagttgatatgtatatgaaagggtactatttgaactctcttact 3887
3888 ctgtataaaggttgatcatccttaaagtgggtctatttaattttattgcttcttacagataaaaaaaaaattatgagtt 3967
3968 ggtttgataaaatattgaaggattttaaataataataaataaataacatataatatgtatataaatttattataa 4047
4048 tataacatttatctataaaaaagtaaatattgtcataaatctatacaatcgtttagccttgctggacgactctcaattat 4127
4128 ttaaacgagagtaaacatatttgactttttggttatttaacaaattattatttaacactatatgaaattttttttttta 4207
4208 tcggcaaggaaataaaattaaattaggagggacaatggtgtgtcccaatccttatacaaccaacttccacaggaaggtca 4287

FIG. 17B



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

4288 ggtcggggacaacaaaaaacaggcaagggaatttttaatttgggttgcttgcttgctgcataatttatgcagtaaa 4367
4368 acactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagcttcttttattttattttttatcagca 4447
4448 aagaataaataaaataaaatgagacacttcagggatgtttcaacccttatacaaaacccccaaaaacaagtttcctagcac 4527
4528 cctaccaactaaggtacc 4545
KpnI

FIG. 17C



Title: PREPARATION OF
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REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

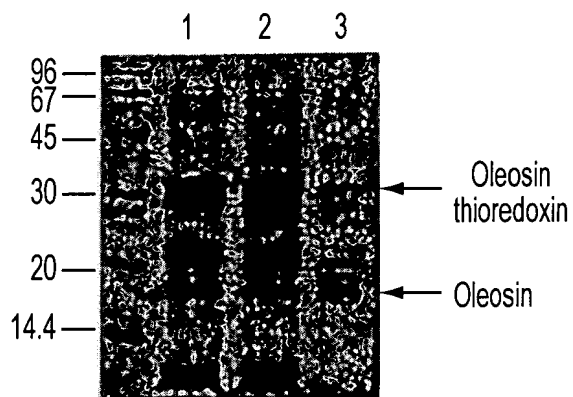


FIG. 18A

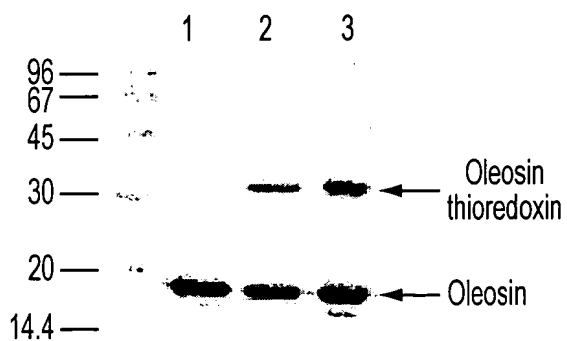


FIG. 18B



Title: PREPARATION OF
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REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
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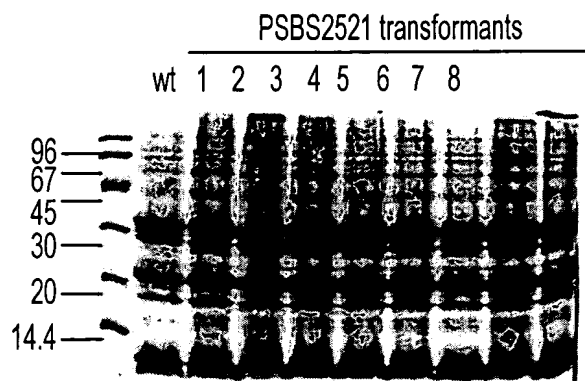


FIG. 19A

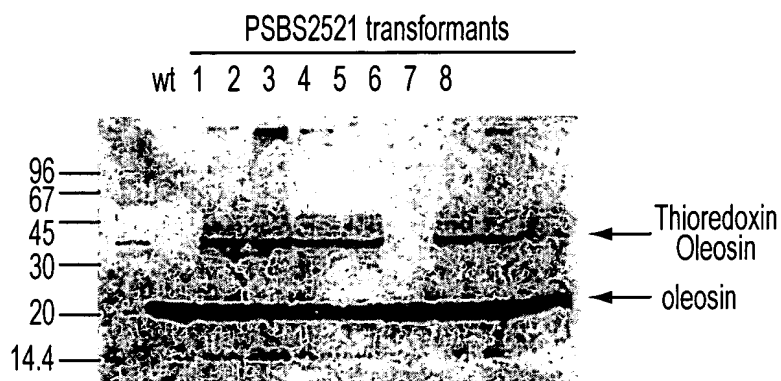


FIG. 19B



Title: PREPARATION OF
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REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

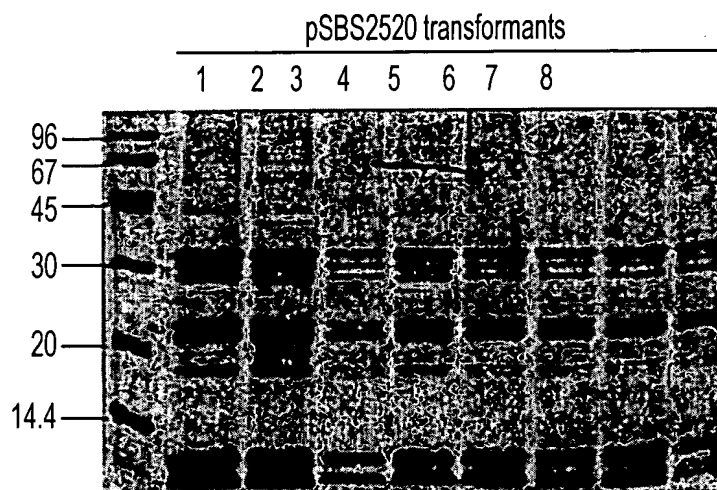


FIG. 20A

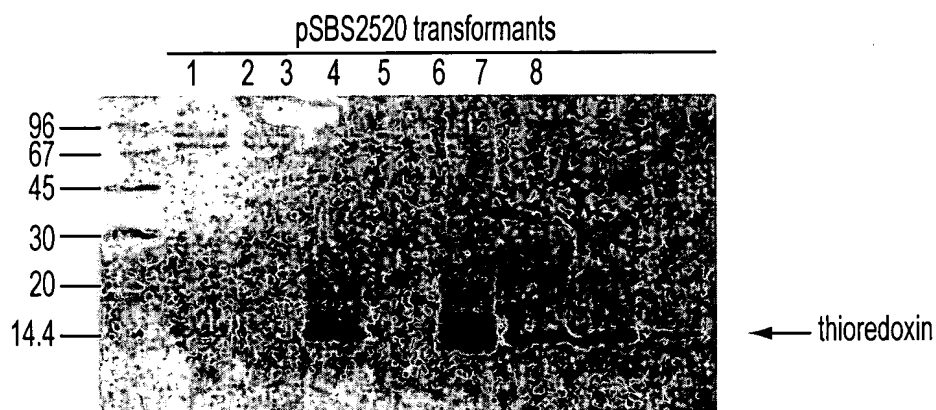


FIG. 20B



Title: PREPARATION OF
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REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

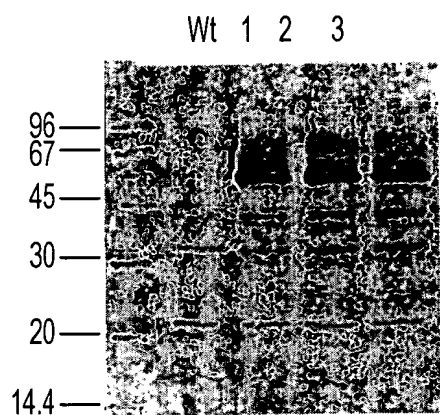


FIG. 21A

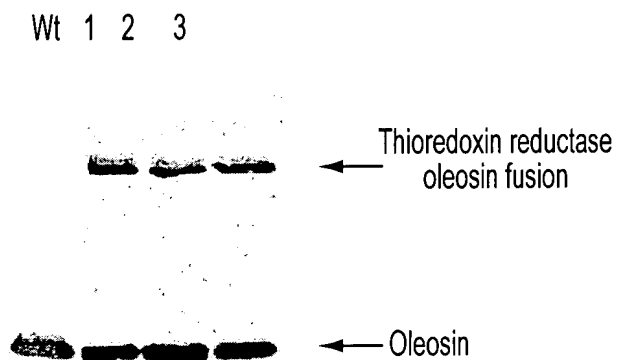


FIG. 21B



Title: PREPARATION OF
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REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

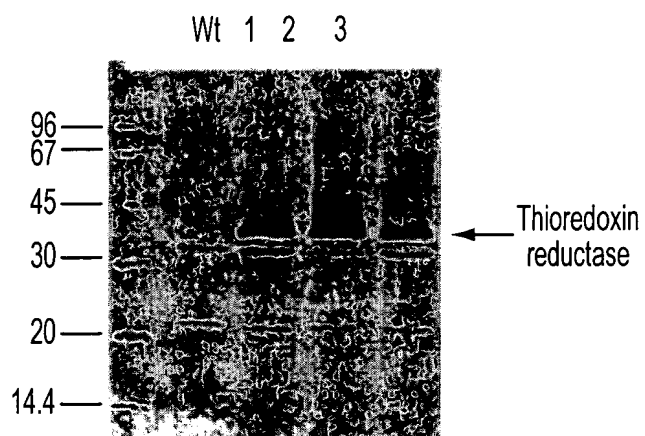


FIG. 22



Title: PREPARATION OF
THIOREDOXIN AND THIOREDOXIN
REDUCTASE ON OIL BODIES
Inventor(s): Maurice M. MOLONEY et al.
Appl. No.: 09/897,425

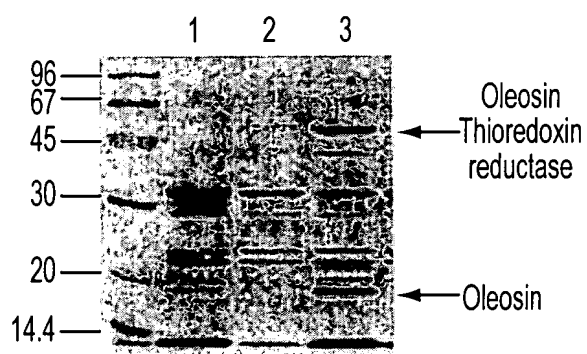


FIG. 23A

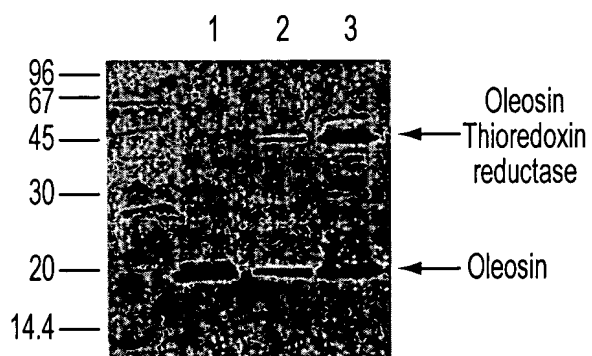


FIG. 23B